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نائب العميد المكلف بما بعد التدرج
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Optimal Power Flow Solution using QPSODM Algorithm

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ABSTRACT

Performing an optimal power flow (OPF) represents an indispensable and complex optimization problem in power systems. From an optimization point of view, the OPF problem implicates the minimization of some objectives. OPF problem is expressed with all pertinent parameters of the power system including generator outputs to get the optimal settings. The power system can include of conventional fossil generators as well as renewable energy sources (RES) such as solar and wind. Classical OPF is considered as a highly non-linear complex problem. The integration of an intermittent source of RES increases the complexity of the problem. In this paper, Quantum-behaved particle swarm optimization differential mutation (QPSODM) algorithm is proposed to solve the OPF problem by combining stochastic wind and solar power with conventional thermal power generators in the system. The objective to be minimized is total generation cost taking into account the tax imposed on the carbon emission by conventional thermal generators. The proposed approach has been examined and confirmed on the modified IEEE 30-bus. Simulation results show that the proposed approach can solve the OPF effectively and can give best and logic results.

KEY WORDS

optimal power flow (OPF); renewable energy sources (RES); generation cost; QPSODM algorithm; Uncertainty

I. INTRODUCTION

Optimal power flow (OPF) is a typical operation problem of power systems. The traditional OPF usually focus on minimizing the overall operating cost of thermal power generators. However, thermal power generators release massive pollutants during operation. Therefore, emission reduction has become one of the most notable hotspot issues. Under this background, power systems need to minimize the emission of pollutants while operating economically. In recent times, RES penetration has drastically increased in the power system. The penetration of RESs has introduced many challenges to the power system. The intermittent nature of RESs makes the system more complex in terms of operation and control. The uncertain nature of RESs is required to be accurately modeled to examine the dynamic functioning of the power system. Due to its unpredictable nature, protection schemes need to be updated for operating the power system in a secure region. [1] designing and realizing an acquisition system for a small wind turbine has been presented. [2] presents a simulation model of all the electrical components constituting a PV (Photovoltaic) power plant connected to distribution network. Impact analysis of the integration of RES (Solar and Wind) into power system are investigated in [3-7]. In a power system, the main aim is to operate it with optimal cost and simultaneously satisfy the operating and security constraints. The OPF determines the optimal control settings by the satisfying system and security constraints to economically operate. A significant amount of research has been carried out in the domain of OPF with the incorporation of RESs in the power system using both deterministic and meta-heuristic optimization algorithms. The gradient method is proposed [8] to develop the dynamic OPF to include wind farms without considering the costs of wind power. For solving the OPF model

in the presence of a wind plant, the authors [9] used the Newton method and interior-point methods. The uncertain nature of wind power has been estimated and is added to the overall cost function. However, deterministic methods are problem-specific, exhibit poor convergence characteristics, and are stuck at local optima points. Moreover, these methods are unable to solve real-world optimization issues. To overcome the drawbacks of deterministic methods, meta-heuristic methods have been introduced. [10] applied MO-OPF using differential evolution (DE) to minimize three objective functions simultaneously, while [11] considered the MO-OPF problem using a genetic algorithm (GA) depending on the strength Pareto method. [12] solved MO-OPF using PSO to minimize fuel cost and power losses emission. Conventional OPF solely considers thermal energy sources but growing fuel prices and environmental impact have prompted governments to investigate renewable energy sources such as wind, solar, and wave energy [13, 14]. Wind and solar energy penetration need to be addressed in the electrical system. As to attain the optimal operation for an electrical system with solar and wind energy sources, it is required to include wind generating costs such as penalty and reverse cost into the normal OPF problem, and this issue is called the stochastic optimal power flow (SCOPF) [15]. [16] applied the SCOPF problem for a system that includes thermal and wind energy sources based on Weibull PDF. [17] applied the SCOPF problem for a system that includes thermal, wind, and solar energy sources.

II. MATHEMATICAL FORMULATION

Generally, the electrical system operator (ESO) has different objectives to be minimized as power loss and cumulative voltage deviation of load buses from their required values. The interaction of these objectives makes it a challenging reaching both targets. Therefore, the form of OPF problem is defined mathematically as follows:

$$\begin{aligned} &Min\ F(X,U) \\ &subject\ to: \begin{cases} H(X,U)=0 \\ G(X,U)\le 0 \end{cases} \end{aligned} \tag{1}$$

Where X is the set of control (independent) variables, U is the set of state (dependent) variables. $F(X,U)$ is the objective function of OPF, $H(X,U)$ is the equality constraints and $G(X,U)$ is the inequality constraints.

A. *CONTROL VARIABLES*

The control variables vector is defined as follows:

$$X = [Pg_2, \dots, Vg_{ng}; Vg_1, \dots, Vg_{ng}; T_1, \dots, T_{nT}; Qc_1, \dots, Qc_{nc}] \tag{2}$$

Where Vg_i is the voltage magnitude of the i^{th} generator bus, Qc_i is the shunt compensator banks of the i^{th} bus and T_i is the i^{th} transformer tap changer (OLTC). ng, nT and nc are the number of generating units, transformers and compensator banks, respectively. The transformer tap settings and shunt compensator banks are considered as discrete variables.

B. *STATE VARIABLES*

The vector of state variables can be defined as follows:

$$U = [Pg_1;\ Vl_1, \dots, Vl_{N_D}; Sl_1, \dots, Sl_{N_l}; Qg_1, \dots, Qg_{ng}] \tag{3}$$

Where Vl_i is the voltage of i^{th} loadbus and Sl_i is the loading of i^{th} line. Qg_i is the reactive power of the generator of the bus i, N_D is the number of loadbus, N_l is the number of branches in the power system.

C. *COST MODEL OF THERMAL GENERATORS*

Thermal generators use fossil fuel for operating. The combination between fuel cost ($/h) and produced power (MW) can be written by the quadratic relation:

$$C_{T0}(P_{TG}) = \sum_{i=1}^{N_{TG}} a_i + b_i P_{TGi} + c_i P_{TGi}^2 \quad (4)$$

Where a_i, b_i, c_i are the cost coefficients of the thermal generator i generating power output P_{TGi}. Where the number of thermal generators is N_{TG}. Valve-point effect needs to be considered for more realistic and precise modelling of cost function. The thermal generating units with multi-valve steam turbines exhibit a greater variation in the fuel-cost functions. The valve loading effect of multi-valve steam turbines is modelled as sinusoidal function, the absolute value of which is added to the basic cost function in Eq. (4). Total generation cost ($/h) of thermal units becomes:

$$C_T(P_{TG}) = \sum_{i=1}^{N_{TG}} a_i + b_i P_{TGi} + c_i P_{TGi}^2 + \left| d_i . \sin(e_i . (P_{TGi}^{min} - P_{TGi})) \right| \quad (5)$$

Where, d_i and e_i are the coefficients that represent the valve-point loading effect. P_{min} is the minimum power the i^{th} thermal unit generates when in operation. All cost and emission coefficients for the thermal generating units used in the calculations are provided in Table 1.

Table 1. Cost and emission coefficients of thermal generators for IEEE-30 bus [18]

Bus	Generator	a	b	c	d	e	α	β	γ	ω	μ
1	TG_1	0	2	0.00375	18	0.037	4.091	-5.554	6.49	0.0002	6.667
2	TG_2	0	1.75	0.0175	16	0.038	2.543	-6.047	5.638	0.0005	3.333
8	TG_3	0	3.25	0.00834	12	0.045	5.326	-3.55	3.38	0.002	2

D. EMISSION AND CARBON TAX

It is well known that generating power from conventional sources of energy emits harmful gases into the environment. The emission of Sulfur oxides (SOx) and Nitrogen oxides (NOx) increases with increase in generated power from thermal power generators following the relationship in Eq. (6). Emission in tonnes per hour (t/h) is calculated by:

$$E = \sum_{i=1}^{N_{TG}} \left[\left(\alpha_i + \beta_i P_{TGi} + \gamma_i P_{TGi}^2 \right) x\ 0.01 + w_i e^{(\mu_i P_{TGi})} \right] \quad (6)$$

Where, α, β, γ, ω and μ are all emission coefficients corresponding to the i^{th} thermal generator. Emission coefficients for the thermal generating units are provided in Table 1. The coefficients are same as in [18].

In recent years, due to global warming, many countries are putting enormous pressure on entire energy industry to reduce carbon emission [19]. To encourage investment in cleaner forms of power like wind and solar, carbon tax (C_{tax}) is imposed on per unit amount of emitted greenhouse gases. The cost of emission in ($/h) is represented as:

$$C_E = C_{tax} E \quad (7)$$

The objective of OPF is formulated incorporating all the cost functions as discussed above. In first objective, emission cost is not included. To study the change in generation scheduling when carbon tax is imposed, second objective function is adopted by adding the emission cost.

Objective function 1

$$F_1 = C_T(P_{TG}) \quad (8)$$

Objective function 2

$$F_2 = F_1 + C_{tax} E \quad (9)$$

The OPF optimisation is subject to some system equality and inequality constraints.

E. EQUALITY CONSTRAINTS

The power balance equations can be expressed as follows:

$$P_{g_i} - P_{d_i} = V_i \sum_{j=1}^{N_b} V_j \left[G_{ij} \cos(\theta_i - \theta_j) + B_{ij} \sin(\theta_i - \theta_j)\right] \quad (10)$$

$$Q_{g_i} + Q_{C_i} - Q_{d_i} = V_i \sum_{j=1}^{N_b} V_j \left[G_{ij} \sin(\theta_i - \theta_j) - B_{ij} \cos(\theta_i - \theta_j)\right] \quad (11)$$

Where N_b is the number of buses. Pd, Qd are active and reactive load demand, respectively. Pg, Qg are active and reactive power of generators connected to bus i, respectively. G_{ij} is the conductance and B_{ij} is the susceptance connecting the buses i and j, respectively.

F. INEQUALITY CONSTRAINTS

The operational limits of the equipment must be kept in a predetermined range and can be expressed as follows:

Generator constraints:

$$\begin{cases} Pg_i^{max} \geq Pg_i \geq Pg_i^{min} \; \forall i \in ng \\ Qg_i^{max} \geq Qg_i \geq Qg_i^{min} \; \forall i \in ng \end{cases} \quad (12)$$

Transformer constraints:

$$T_i^{max} \geq T_i \geq T_i^{min} \; \forall i \in nT \quad (13)$$

Shunt compensator constraints:

$$Qc_i^{max} \geq Qc_i \geq Qc_i^{min} \; \forall i \in nc \quad (14)$$

Security constraints:

$$\begin{cases} V_i^{max} \geq V_i \geq V_i^{min} \; \forall i \in N_b \\ Sl_i^{max} \geq |Sl_i| \; \forall i \in N_l \end{cases} \quad (15)$$

III. RENEWABLE ENERGY SOURCE UNCERTAINTY MODELS

The probability of wind speed *v* (m/s) following Weibull distribution with shape factor (k) and scale factor (c) can expressed by:

$$f_w(v) = \left(\frac{k}{c}\right)\left(\frac{v}{c}\right)^{k-1} exp\left[-\left(\frac{v}{c}\right)^k\right] \quad (16)$$

Actual output power from wind turbines depends on the wind speed. Power output of a turbine as a function of wind speed (*v*) can be described as follows [20, 21]:

$$P_w(v) = \begin{cases} 0 & v < v_{in} \text{ and } v > v_{out} \\ P_{wr}\left(\dfrac{v - v_{in}}{v_r - v_{in}}\right) & v_{wr} \geq v \geq v_{in} \\ P_{wr} & v_{out} \geq v \geq v_{wr} \end{cases} \quad (17)$$

Where $P_w(v)$ is wind output power in (MW), v is the wind speed in (m/s), P_{wr} is the rated output wind power, and v_{in}, v_{out}, v_r are the cut-in, cut-out and rated wind speed, respectively.

PV solar irradiance is unpredictable and intermittent due to weather variations. The probability Beta Distribution Function (BDF) is used to describe the random phenomenon of the irradiance data for each unimodal, as follows:

$$PR_s(G) = \begin{cases} \dfrac{\Gamma(a+b)}{\Gamma(a)\Gamma(b)} G^{(a-1)} \text{ for } 0 \le G \le 1000 \text{ and } a, b \ge 0 \\ 0 \quad ; \quad Otherwise \end{cases} \tag{18}$$

Where a and b are the parameters of the Beta function, Γ is the Gamma function. In order to calculate the parameters of the BDF, the mean μ_s and standard deviation σ_s of the random variable G are used as follows:

$$a = \frac{\mu_s b}{1-\mu} \qquad \text{and} \qquad b = (1-\mu_s)\left(\frac{\mu_s(1+\mu_s)}{{\sigma_s}^2} - 1\right) \tag{19}$$

The solar irradiance to energy conversion function of the PV system can be expressed as follows:

$$P_s(G) = \begin{cases} 0 & G = 0 \\ P_{sr}\left(\dfrac{G^2}{R_c G_{std}}\right) & R_c > G > 0 \\ P_{sr}\left(\dfrac{G}{G_{std}}\right) & G \ge R_c \end{cases} \tag{20}$$

Where G is the solar irradiance in (W/m^2), G_{std} is the solar irradiance in standard environment set as 1000 W/m^2. R_c presents a certain irradiance point set as 150 W/m^2. P_{sr} is the rated output power of the PV system. Here, it is assumed that the temperature of PV cell is neglected and the PV output power is mainly subordinated on the irradiance [20, 21].

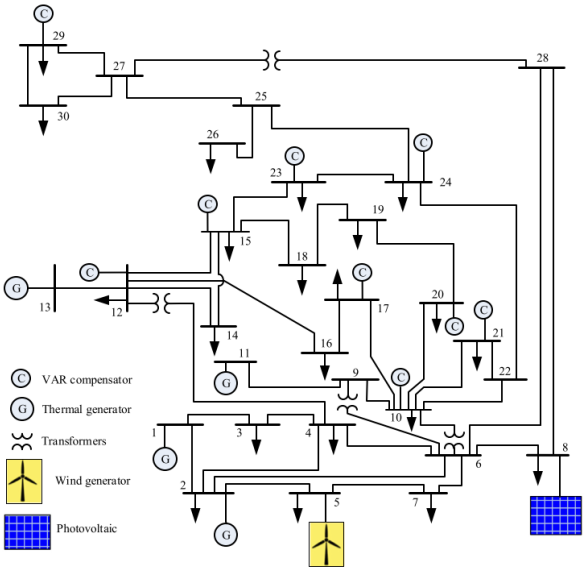


Fig. 1. Single line diagram of the modified IEEE 30 bus system.

A. MODIFIED IEEE 30 BUS SYSTEM

The IEEE 30-bus system involves 6 generators, 41 lines, 4 transformers that are located at lines 6-9, 4-12, 9-12 and 27-28. 9 reactive compensators are installed at buses 10, 12, 15, 17, 20, 21, 23, 24 and 29. The single line diagram of

the system under study is shown in Fig. 1. In our case study of IEEE-30 bus system, conventional generators in bus 5 and bus 8 are replaced by wind farm and solar plant, respectively.

Minimum and maximum limit settings for, bus voltage, generators voltages, tap transformers are provided in Table 2.

Table 2. Description of system under study

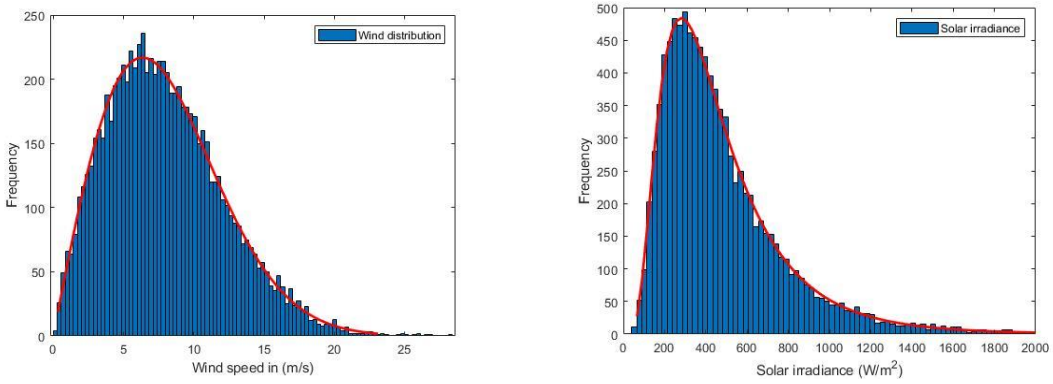
Description	IEEE 30-bus
Buses	30
Generators	6
Transformers	4
Shunt capacitors	9
Load buses	19
P_{load} (MW)	283.4
Q_{load} (MVAr)	126.2
Initial P_{loss} (MW)	5.812
Generators voltage (pu)	[0.95 - 1.10]
Load bus voltage (pu)	[0.94 - 1.06]
OLTC setting (pu)	[0.90 - 1.10]

Upper and lower limits of real and reactive power generations are given in Table 3.

Table 3. Generators data of the modified IEEE 30 bus test

Bus	Pg (MW)	Pgmin (MW)	Pgmax (MW)	Qgmin (MVar)	Qgmax (MVar)
1	Slack	50	200	-20	150
2	80	20	80	-20	60
5	50	15	50	-15	62.5
8	20	10	35	-15	48.7
11	20	10	30	-10	40
13	20	12	40	-15	44.7

Wind speed and solar irradiance distributions with corresponding parameters are displayed in Fig. 2.(a) and Fig. 2.(b), respectively.



(a) **(b)**

Fig. 2. RES distribution: **(a)** Wind speed (c = 9.9, k = 2.5). **(b)** Solar irradiance (a = 17.5, b = 1.3).

IV. QPSODM ALGORITHM FORMULATION

In this section, PSO and quantum-behaved PSO (QPSO) search algorithm are described first, followed by QPSODM algorithm, the constraints handling is also defined. The complete and detailed description of the algorithm can be found in [20, 21]. A QPSO which include differential mutation (QPSODM) algorithm for solving the ORPD problem is proposed. The main purpose of including differential mutation part in the QPSO algorithm is for improving the global search capability.

The differential mutation (DM) process is performed on each agent of the following vector,

$$x_{i,j}^{t} = x_{i,j}^{t} + f_m(x_{a,c}^{t} - x_{b,d}^{t})\,;\; i = 1,2,\ldots,m \,\&\, j = 1,2,\ldots,n. \quad (21)$$

Where f_m is called (mutation factor), this factor is utilized for adjusting the perturbation size in the mutation operation as well as improving the convergence of the algorithm. a and b are random integers uniformly chosen from the range $[1, 2, \ldots, m]$. c and d are randomly chosen with uniform distribution between the range $[1, 2, \ldots, n]$. In Eq. (21), the term $f_m(x_{a,c}^{t} - x_{b,d}^{t})$ is called differential part. The description of the proposed algorithm is abstracted here below.

Step 1: *Create particles with random positions and set the P_{best} position of each particle as $P_{best,i}^{0} = x_{best,i}^{0}$.*
Step 2: *Set the generation counter as $t = 1$.*
Step 3: *Compute the mean best position M for all particles.*
Step 4: *For each particle, compute the objective function $f(x_i^t)$, constraint function and constraint handling by using the Eqs. If $(x_i^t) < f(x_i^{t-1})$, then $P_{best,i}^{t} = x_i^t$ and $f(P_{best,i}^{t}) = f(x_i^t)$.*
Step 5: *Select the current G_{best} position G_{best}^{t}.*
Step 6*: For each particle, select the stochastic value $\Omega_{i,j}^{t}$.*
Step 7: *Update each agent of the current position $x_{i,j}^{t+1}$.*
Step 8: *For each agent of new position $x_{i,j}^{t+1}$, perform the DM operation with mutation probability P_m, and then return to Step 2.*

The flowchart of the proposed algorithm is shown in Fig. 3.

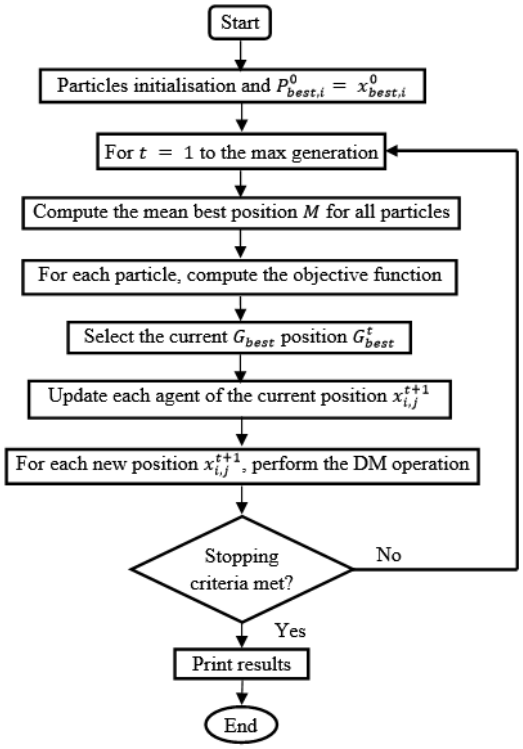


Fig. 3. Flowchart of the proposed method.

V. SIMULATION RESULTS

Several case studies are performed for adapted IEEE-30 bus system. Results of the case studies with application of QPSOMD algorithm are treated in this section. In each optimization case study, a maximum of 400 iterations are performed in a single run of the algorithm. Each simulation is run several times and the best value of the objective function corresponds to the settings of the control variables are recorded.

A. CASE 1: MINIMIZATION OF THE GENERATION COST

This case performs optimization of generation planning for all thermal and renewable source generators to minimize total generation cost given by Eq. (8). PDF parameters are taken from [20, 21] and provided in Fig. 2a and Fig. 2b.

The convergence of QPSOMD algorithm is indicated in Fig. 4. As can be seen from the curve, the optimum cost is achieved within about 100 iterations. Optimum settings of all control variables, generator reactive power (Q), total generation cost and other useful calculated parameters are summarized in Table 4. Voltage V_i in the table signifies the voltage at bus *i*, Ploss and CVD are calculated using Eqs. as in [20, 21]. According to the generation schedules tabulated in the Table 4, minimum generation cost that can be achieved is 787.29 $/h.

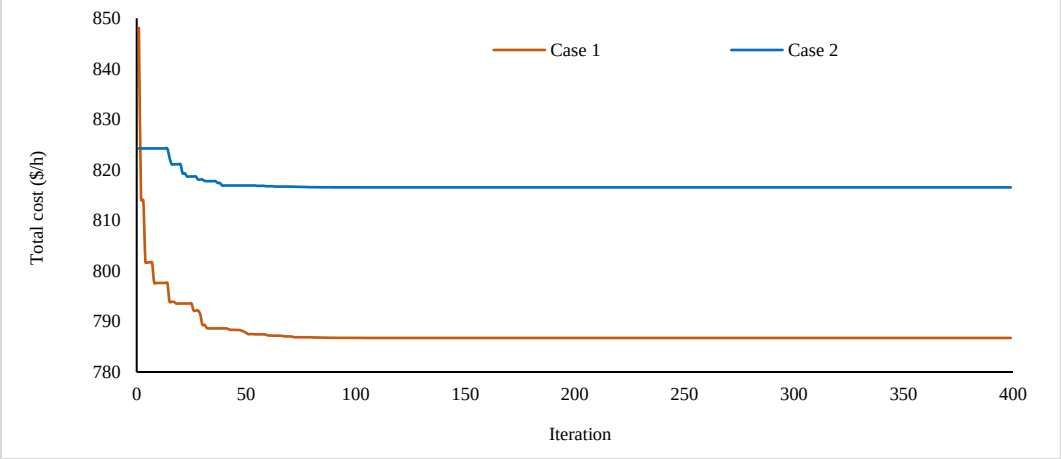


Fig.4. Optimization convergence for Case 1 and Case 2.

B. CASE 2: MINIMIZATION OF GENERATION COST WITH CARBON TAX

This case study minimizes total generation cost that includes carbon tax imposed on the emission from conventional thermal power generators. The total cost, given by Eq. (9), is to be minimized. Carbon tax rate (C_{tax}) is assumed to be 20 $/tonne as in [19]. As wind and solar power are clean form of energy, the integration of these sources should be increased due to the carbon tax rate. Optimum generation schedule, generator reactive power, total generation cost with carbon tax and other calculated parameters are tabulated in Table 4.

Table 4. Simulation results for the different cases – Modified IEEE 30-bus system

Control Variables	Min	Max	Case 1	Case 2	Parameters	Min	Max	Case 1	Case 2
Pg1 (MW)	50	200	134.91	124.37	Qg1 (MVAr)	-20	150	-2.1968	-2.5787
Pg2 (MW)	20	80	30.997	35.517	Qg2 (MVAr)	-20	60	12.023	12.712
Pw5 (MW)	0	50	45.09	47.277	Qg5 (MVAr)	-15	62.5	22.417	22.851
Pg8 (MW)	10	35	10	10	Qg8 (MVAr)	-15	48.7	40	35.614
Pg11 (MW)	10	60	38.03	39.764	Qg11 (MVAr)	-10	40	30	30
Ps13 (MW)	0	40	30.125	31.757	Qg13 (MVAr)	-15	44.7	14.786	17.122
V1 (p.u)	0.95	1.10	1.0722	1.0713	Tot Cost ($/h)	-	-	787.29	798.1
V2 (p.u)	0.95	1.10	1.0574	1.0579	Emission (t/h)	-	-	1.7616	0.9356
Vw5 (p.u)	0.95	1.10	1.0356	1.0368	Ploss (MW)	-	-	5.7504	5.2856
V8 (p.u)	0.95	1.10	1.0999	1.0406	CVD (p.u)	-	-	0.45261	0.46568
V11 (p.u)	0.95	1.10	1.0984	1.0982					
Vs13 (p.u)	0.95	1.10	1.0479	1.0541					

It can be noted that the integration of both solar and wind energy is higher when carbon tax is imposed in Case 2 than in Case 1 (no penalty on emission). As expected, the magnitude of the increase in the optimal production schedule of RES depends on the volume of emissions and the rate of the carbon tax imposed.

In OPF problem, constraint on load bus voltage is also critical as operating voltages of load buses are often found be close to their limits. In this paper, the load bus voltage must be maintained within [0.95 and 1.05] p.u. The voltage profiles of load buses are drawn in Fig .5 for Case 1 and Case 2. From this figure, the two curves are almost similar.

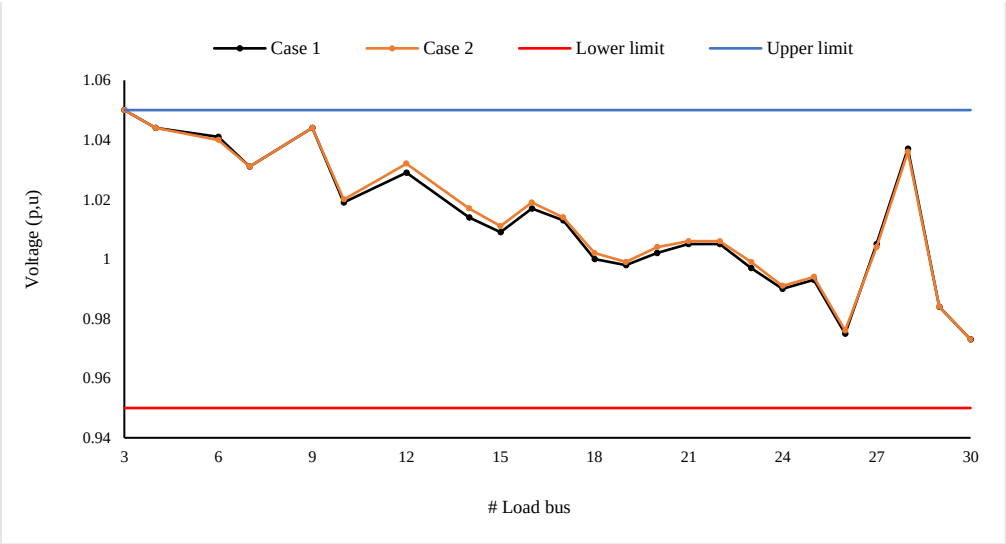


Fig.5. Load bus voltage profiles for Case 1 and Case 2.

Table 5. Comparison of results with previous published methods

Case	Objective functions	MOEA/D [22]	NSGA-[22]	MOPSO [22]	MOEA [23]	MA [24]	MTLBO [25]	TLBO [25]	**Proposed method**
Case 1	Tot Cost ($/h)	799.0263	-	-	798.6845	801.84	-	-	**787.290**
Case 2	Tot Cost ($/h)	799.29	799.41	801.33	794.0907	838.81	801.8925	801.9908	**798.100**

Table 5 compares the obtained results by the proposed algorithm QPSODM with some previously published results on OPF solution. According to this, the proposed algorithm can achieve better and logical results comparing with published algorithms reported in [22-25]. Actually, the comparison of the results depends not only on the algorithm used, but also on the utilised limit values (generator voltage, OLTC and shunt compensator value) as well as the constraints handling technique.

VI. CONCLUSION

This paper proposes a solution approach to the OPF problem considering stochastic solar photovoltaic and wind integration into the power system. Uncertainties are modelled with different probability density functions are used to model the uncertainty of intermittent renewable energy sources. Total generation cost taking into account the tax imposed on the carbon emission by conventional fossil generators is studied. Moreover, due to best convergence of the QPSODM algorithm to global optima, it can successfully be applied to other multimodal and highly non-linear optimization problems. The proposed QPSODM is applied for obtaining improved solutions to global optimization for OPF problems.

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People`s Democratic Republic of Algeria
Ministry of Higher Education and Scientific Research
University Mustapha Stambouli of Mascara

ACCEPTANCE LETTER

Dear Pr. Mourad Naidji,

Paper ID: 12

We are pleased to inform you that your paper entitled:

"*Optimal Power Flow Solution using QPSODM Algorith*"

has been accepted for **"Oral"** presentation in the 1st International Conference on Advances in Electronics, Control and Computer Technologies, ICAECCT'23, scheduled to be held from 25 -26 October 2023 in University Mustapha Stambouli of Mascara, Mascara, Algeria.

On behalf of the Organizing Committee, we would like to thank you for your submission and consideration and we look forward to your presentation at ICAECCT'23 conference.

Best regards,

Dr. Samir GHOUALI
ICAECCT'23 General Chair
On behalf of the ICAIRES2023 Organizing Committee

People's Democratic Republic of Algeria
Ministry of higher education and scientific research
University of MUSTAPHA STAMBOULI Mascara
Faculty of Sciences and Technology

جامعة مصطفى اسطمبولي
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THE 1st INTERNATIONAL CONFERENCE ON ADVANCES IN ELECTRONICS, CONTROL AND COMPUTER TECHNOLOGIES

25-26 October 2023

ICAECCT'23

The ICAECCT is the first international Conference on Advances in Electronics, Control and Computer Technology, organized by Department of Electrical Engineering, Faculty of Sciences and technology, Mustapha Stambouli University of Mascara, Algeria.
This conference aims to bring all prominent scientists, researchers, innovators, inventors, and industrial practitioners to exchange and share experiences and research results on automatics, electronics, Telecommunications, biomedical and High Voltage Engineering.

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TOPICS

Topic 1: Control Systems, Robotics and Automation

Topic 2: Electronics and its applications

Topic 3: Telecommunications

Topic 4: Biomedical Engineering

Topic 5: High Voltage Engineering and Applications

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THE SPEAKERS

Pr.Said Mammar
Director of the Science and Technology Department, Evry University, France

Pr. Mohamed Benaoumeur Senouci
University of Southern Denmark

Pr. Emad Kamil Hussein
Professor of Mechanical Engineering at Al-Furat Al-Awsat Technical University, Iraq

Pr. Miloud Rezkallah
Department of Electrical Engineering; École de Technologie Supérieure (ETS) Montréal, Québec, Canada

Dr. Edeh Michael Onyema
Head of Department, Mathematics and Computer Science, Coal City University, Nigeria

Full-Text paper submission deadline: 01/08/2023
Notification of acceptance/rejection: 01/09/2023
Camera ready: 15/09/2023

Université Mustapha STAMBOULI
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ICAECCT

Department of Electrical Engineering
Faculty of Sciences and Technology
MUSTAPHA STAMBOULI University

The 1st International Conference on Advances in Electronics, Control and Computer Technologies.

October 25th - 26th, 2023
Mascara, Algeria

PROGRAM SCHEDULE

ICAECCT'23

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ICAECCT 2023

ABOUT

The ICAECCT is the first international Conference on Advances in Electronics, Control and Computer Technology, organized by the faculty of Sciences and technology, Mustapha Stambouli University of Mascara, Algeria.
This conference aims to bring all prominent scientists, researchers, innovators, inventors, and industrial practitioners to exchange and share experiences and research results on automatics, electronics, Telecommunications and biomedical engineering.
The ICAECCT'23 includes variety topics related to the: control systems, robotics and automation, electronics and its applications, telecommunications, biomedical engineering and High Voltage Engineering.
For the first edition of the ICAECCT'23 will be a hybrid conference that will run fully in-person and fully virtually.

CONFERENCE TOPICS

CONTROL SYSTEMS, ROBOTICS AND AUTOMATION
ELECTRONICS AND ITS APPLICATIONS
TELECOMMUNICATIONS
BIOMEDICAL ENGINEERING
HIGH VOLTAGE ENGINEERING AND APPLICATIONS

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University Mustapha Stambouli of Mascara, Algeria

25 October 2023

08:30 - 17:00	**CONFERENCE REGISTRATION AND CUSTOMER RELATIONS**	
08:30 - 09:00	**WELCOMING ATTENDEES**	
09:00 - 09:20	NATIONAL ANTHEM النشيد الوطني RECITATION OF VERSES FROM THE HOLY QURAN تلاوة آيات من القرآن الكريم	
09:20 - 10:00	**OPENING CEREMONY** ***Mr. Farid Mohamedi*** WALI de Mascara ***Prof. Abed BOUADI*** Rector of Mustapha Stambouli University, Mascara, Algeria Honorary Co-President ***Prof. Rabah KHENATA*** Vice Rector for External Relations, Cooperation, Animation, Communication and Scientific Events Honorary Co-President ***Dr. Amaria BEKHTI-SIAD*** Interim Dean of the Faculty of Sciences and Technology Conference Chair ***Dr. Samir GHOUALI*** Associate Professor, Faculty of Sciences and Technology, Mustapha Stambouli University Mascara Algeria	
10:20 - 10:40	PLENARY	Prof. Mohamed Benaoumeur Senouci University of Southern Denmark (PRESENTIAL) **BRINGING THE POWER OF AI TO THE INTERNET OF THINGS**
10:40 - 11:00		Prof. Miloud Rezkallah Senior Researcher/Project Manager CR2IE | Energy Intelligence Research and Innovation Center Associate Professor; School of Higher Technology (ETS), Canada (PRESENTIAL) **CHALLENGES AND IMPLEMENTATION OF DECENTRALIZED SMART ENERGY SYSTEMS FOR REMOTE SITES IN CANADA**
11:00 - 11:20		Prof. Mustapha HATTI Research Director - UDES/EPST-CDER (PRESENTIAL) **SMART CITIES: CONCEPTS AND CONDITIONS OF SUCCESS**
11:20 - 11:40		Dr. Michael Onyema EDEH Head of Department, Mathematics and Computer Science at Coal City University, Nigeria (VIRTUAL) **Cybersecurity implication of Mobile Banking**
11:40 - 12:00		Prof. Kamil Hussein EMAD Doctor of Engineering, Professor of Mechanical Engineering at Al-Furat Al-Awsat Technical University - Iraq (VIRTUAL)
12:00 - 14:00		

FACE TO FACE CONFERENCE ORAL SESSION (Physical)

ROOM A: Control Systems, Robotics and Automation

Session Chairmen	**Prof. Miloud REZKALLAH** Senior Researcher/Project Manager at CR2IE | Energy Intelligence Research and Innovation Center Associate Professor; School of Higher Technology (ETS), Canada **Dr. Djamel Eddine CHAOUCH** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Ahmed LARBAOUI** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria

	ID	
14:00- 14:15	55	Modeling a Hybrid Compensation System Using Robust GPC Control with a Recurrent Neural Network to Compensate for Powers in a Transmission Line Participant: Abdelkrim BOUANANE, Dr. Moulay Taher University Saida Co-authors: NERZIOU MADANI, RAOUTI DRISS, YAHIAOUI MERZOUG
14:15- 14:30	71	Study the Influence of Emotions on Language Identification from Speech Participant: Houari HORKOUS, Ecole National Polytechnique Co-authors:
14:30- 14:45	72	Passivity based control of a two-link flexible manipulator Participant: Adel BELHERAZEM, University of sciences and technologies of Oran Co-authors: Zakaria BELLAHCENE, Abdelmalek LAIDANI
14:45- 15:00	73	Robust Adaptive Control of Remotely Operated Underwater Vehicle (ROV) for Dam Inspection Participant: Zakaria BELLAHCENE, University of sciences and technology of Oran Co-authors: ADEL BELHERAZEM, Abdelmalek LAIDANI, Mohammed BOUHAMIDA
15:00- 15:15	75	Photovoltaic Generator Analysis based on Maximum Power Point Tracking with DC/DC Converter for Motor Pump Applications Participant: Fatima MOULAY, University of Technology Djilali Liabes of Sidi bel abbes Co-authors: HABBATI ASSIA, OUKLI MIMOUNA
15:15- 16:15		**Poster session 1 & coffee break**
16:15- 16:30	302	Telemetries forecasting: A preventive approach for satellite operations, diagnostic and monitoring Participant: Ali KADDOURI, Algerian Space Agency Co-authors: Saiah Bekkar, Djelloul Saiah
16:30- 16:45	78	Energy Management System Enhancement for Electric Vehicle Application Participant: Ibrahim Farouk BOUGUENNA, University Mustapha Stambouli of Mascara Co-authors: Abdelghani ZABEL, Ahmed TAHOUR, Mohammed Benmadani DEBBAT, Mohamed AMRI

ICAECCT '23 25,26 October 2023

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ROOM B: Electronics and its Applications

Session Chairmen	**Prof. Mustapha HATTI** Research Director - UDES/EPST-CDER **Dr. Mourad HEBALI** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Hocine Abdelhak AZZEDDINE** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Abdelkader MAACHOU** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria	
	ID	
14:00- 14:15	**50**	Optimization of Technological Parameters Process of Mechanically Stacked Si/Ge Solar Cell for High Performance Participant: Kheira AMEUR, University Djillali Liabes of Sidi Bel Abbes Co-authors: Nadia BENSEDDIK, Halima MAZARI, Kheira OUARI, Zineb BENAMARA
14:15- 14:30	**156**	Effective MPPT Technique for Wind Energy Conversion System Participant: Mohamed KAOUANE, Faculty of technology - UMBB Co-authors: Akkila BOUKHELIFA
14:30- 14:45	**166**	Small Size, Big Impact: CubeSat Imaging with COTS Hardware Participant: Mohammed amine ZAFRANE, University of Science and Technologies of Oran Co-authors: AHMED RAMZI HOUALEF, AHMED TAHIR
14:45- 15:00	**51**	Forest Firefighting Using Drone and Artificial Intelligence Participant: Ibrahim Farouk BOUGUENNA, University Mustapha Stambouli of Mascara Co-authors: Zolikha DAHNOUN
15:00- 15:15	**161**	Closed Loop Ćuk Converter Modeling for Photovoltaic Conversion System Participant: Mohamed Kaouane, Faculty of technology - UMBB Co-authors: Akkila BOUKHELIFA
15:15- 16:15		**Poster session 1 & coffee break**
16:15- 16:30	**123**	Spontaneous Electric Polarization and Photovoltaic Properties of Stephanite for Thin-Film Solar Celle: A First-Principles Investigation Participant: Naouel CHELIL, University Mustapha Stambouli of Mascara Co-authors: Mohammed SAHNOUN
16:30- 16:45	**177**	Study and development of a pseudo-random number generator on FPGA Participant: Omar Medjadj, University Mustapha Stambouli of Mascara Co-authors: Benaoumeur IBARI, Mourad HEBALI, Rezali BAGHDADI, Mohammed El-Amine BEYOUR, Hocine Abdelhak AZZEDDINE
16:45- 17:00	**196**	Study the Electrical Characteristics of a Schottky Diode Based Au/n-type InN/InP at Different Frequencies Participant: Abdelkader BAGHDAD BEY, University Mustapha Stambouli of Mascara Co-authors: A. TALBI, M. A. BENAMARA, Z. BENAMARA, F. DUCROQUET

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ROOM C: Telecommunications and its Applications

Session Chairmen	**Prof. Mohamed Benaoumeur Senouci** University of Southern Denmark **Dr. Mohamed Larbi TAYEBI TAYEBI** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Mokhtar BESSEGHIER** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Mouweffeq BOUREGAA** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Fouad KHERBOUCHE** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria

	ID	
14:00- 14:15	14	Electromagnetic Optimization of Bandpass Cross-Coupled Filter for mobile Communications Participant: Lamia SENASLI, Laboratory of Electronics, Advanced Signal Processing and Microwave Co-authors: MEHDI DAMOU, NOUR EL HOUDA SARA SENASLI, CHETIOUI MOHAMMED GOUNI SLIMANE, ABDELHAKIM BOUDKHIL
14:15- 14:30	256	Preamble Design for Channel Estimation in FBMC/OQAM systems Participant: Ahmed Bouzidi DJEBBAR, Djillali Liabes University, Sidi-Bel-Abbes Co-authors: DAHMANE REBOUH, MOKHTAR BESSEGHIER
14:30- 14:45	19	Design of a Filter Based on Direct Coupled Resonators Using the Coupling Matrix Technique Participant: Mehdi DAMOU, Laboratory of Electronics, Advanced Signal Processing and Microwave Co-authors: GOUNI SLIMANE, BOURAS MAROUA, CHETIOUI MOHAMMED, BOUDLHIL ANDELHAKIM, NOURI KELTOUMA
14:45- 15:00	108	Optimization of Pedestrian Mobility Management in 5G NR Network based on Spectrum Sensing and NLMS Algorithm Participant: Zineb ZIANI, USTO-MB University, Oran Co-authors: MOHAMMED HICHAM HACHEMI, MILOUD BENCHEHIMA, IKRAM SARI MOHAMMED, FARAH SABRI, BOUABDELLA RAHMANI
15:00- 15:15	143	Miniaturization of a Low-Cost Dual Band Antenna for C Band Applications Participant: Abdellatif BERKAT, Abou Bakr Belkaid University-Tlemcen Co-authors: Zeyneb BERKAT, Mohamed LATRACH

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15:15- 16:15	Poster session 1 & coffee break	
16:15- 16:30	169	Design and Analysis Frequency Reconfigurable Multiband Patch Antenna for 5G Networks and Beyond Participant: REFSI Ismahane, USTO-MB University, Oran Co-authors: MILOUD BENCHEHIMA, MOHAMMED HICHAM HACHEMI, BOUABDELLA RAHMANI
16:45- 17:00	167	Enhanced Mobility Management on Vehicular Communication System in 5G New Radio Wireless Networks Participant: Bahmed BABA OU SMAIL, USTO-MB University, Oran Co-authors: MOHAMMED HICHAM HACHEMI, MILOUD BENCHEHIMA, MOHAMMED EL-KHALLIL BELHADJ, MEHDI ABDELHAK AND BOUABDELLA RAHMANI

ROOM D: Biomedical Engineering		
Session Chairmen	**Dr. Khadidja GOUIZI** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Nabila HAMLIL** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Abdelkader HORCH** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. MOHAMMED SEGHIR GUELLIL** Faculty SEGC, University Mustapha Stambouli of Mascara, Algeria	
	ID	
14:00- 14:15	151	Multimodal MRI-Based Alzheimer's disease Classification Using CNN Participant: HOURIA Latifa, University of Blida 1 Co-authors: LATIFA HOURIA, ASMAE MAMA ZAIR, ASSIA BOUZOUAD CHERFA, YAZID CHERFA, NOUREDDINE BELKHAMSA
14:15- 14:30	33	LSTM for epileptic disease recognition Participant: Ghezala CHEKHMANE, University of Abou Bekr Belkaid Tlemcen Co-authors: RADHWANE BENALI
14:30- 14:45	65	Secure and Accurate Identity Verification through Retinal Biometrics: A Novel Approach with Isodata and Entropic Thresholding Techniques Participant: Aicha MOKHTARI, University of Abou Bekr Belkaid Tlemcen Co-authors: HADJ SLIMANE ZINE EDDINE

14:45- 15:00	24	Blood Product Prediction using Supervised Machine Learning Participant: Amel YKHLEF, National Polytechnic School of Oran Co-authors: LABRI NADJLA SELMA, BRAHAMI MENAOUER
15:00- 15:15	150	Advancing MRI-Based Tumor Detection and Classification in Brain Images: A Comprehensive Framework Utilizing Image Processing and Machine Learning with MATLAB GUI Integration Participant: Abdallah OUMSALEM, Hassiba Ben Bouali University of Chlef, Algeria Co-authors: Yamina BOUREZIG
15:15- 16:15	Poster session 1 & coffee break	
16:15- 16:30	136	Medical Image Registration Using Local Feature Points & Genetic Search Participant: Fatiha MESKINE, Djillali Liabes University of Sidi-Bel-Abbes Co-authors: Oussama MEZOUAR
16:30- 16:45	193	Machine Learning for Optimizing Diabetes Prediction: A Comparative Analysis Participant: Mohamed AMMARA, University Mustapha Stambouli of Mascara Co-authors: Mokhtar BESSEGHIER
16:45- 17:00	142	Study and simulation of biosensors based AlGaN/GaN MOS-HEMTs for specific detection of biomolecules Participant: Abdellah BOUGUENNA, University of Sciences & Technology of Oran (USTO-MB) Co-authors: DRISS BOUGUENNA, AMINE BOUDGHENE STAMBOULI
17:00- 17:15	38	New hybrid FCM-ABC algorithm for Brain MRI segmentation Participant: Boumediene Ghaouti GHAZI, University Mustapha Stambouli of Mascara Co-authors: BOUDJELAL MEFTAH

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CONFERENCE POSTER SESSION 1

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ID		
84	Design of a New Direct Vector Control Using Synergetic Theory for Five-Phase Induction Motor	
	Participant	Fayçal MEHEDI Hassiba Benbouali University, Chlef
	Co-authors	ISMAIL BOUYAKOUB, LEMYA DJAFER, NEZLI LAZHARI, DJAMEL BOUDANA
112	A competitive dual axis solar tracker system	
	Participant	Ghalem Kamel Ghanem Higher School of Energetic and Electrical Engineering, Oran
	Co-authors	BELAIDI IKHLAS, ANTAR KAWTHER, BENOUAR ALI, AHMED BACHA MOHAMED REDA
117	Optimal choice of weightings functions for synthesis a robust H∞ controller based on Loop –Shaping using Genetics Algorithms	
	Participant	Djamel eddine GHOURAF National Polytechnic School- Oran
	Co-authors	NACERI ABDELLATIF
126	Design of a robust nonlinear surface sliding mode controller for a quadrotor helicopter	
	Participant	Naima BOUHABZA Université Blida1
	Co-authors	KARA KAMEL
158	Algerian Database Under Development for Automatic Emotion Recognition	
	Participant	Zineddine S. KAHHOUL University of Mohamed Khider Biskra
	Co-authors	SELMA BOUTIBA, HABIBA DAHMANI, NADJIBA TERKI, MOHAMED L. TIAR, ABIR BETKA, ZAYED FERHAT, RIYAD BARKA
178	Real time control of a flight simulator	
	Participant	Sadek NEKROUF University Mustapha Stambouli of Mascara
	Co-authors	SOUFYANE CHEKROUN, KHATIR TABTI
175	Application of fuzzy logic to the control of an industrial 3D Crane	
	Participant	Fatima AFFANE University Mustapha Stambouli of Mascara
	Co-authors	M.ZAREB, A. KHEDIM, M. ALQUDAMI
183	Sliding Mode Controller with a Neuro-Fuzzy Optimized Network (STFIS) for Robotic Manipulator Trajectory Tracking	
	Participant	Djamel Eddine CHAOUCH University Mustapha Stambouli of Mascara
	Co-authors	AHMED LARBAOUI, HOCINE ABDELHAK AZZEDINE

Samir GHOUALI
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184	Application Of Direct and Indirect Adaptive Controller Neural Network Based on Rbf Nn for Temperature Control of Electric Resistance	
	Participant	Benyekhlef KADA University Mustapha Stambouli of Mascara
	Co-authors	DJAMEL EDDINE CHAOUCH, ABDELKADER ELKEBIR
250	Applied the different Direct Torque control on the IM	
	Participant	Moulay ldriss CHERGUI University Mustapha Stambouli of Mascara
	Co-authors	ABDELHAQ LAOUFI, SOUFYANE CHEKROUN
301	Real-time implementation of single-phase inverter for photovoltaic system based on DC/DC and DC/AC stages	
	Participant	Abdelkader EL KEBIR University Mustapha Stambouli of Mascara
	Co-authors	HAFIDA BELHADJ
400	Design of a Fly back converter using TL494 control circuit for a photovoltaic system	
	Participant	HAFIDA BELHADJ University Mustapha Stambouli of Mascara
	Co-authors	Abdelkader EL KEBIR
251	Morphology influence of the donor and acceptor molecules of the active layer on the response parameters of organic photovoltaic cells OPVCs	
	Participant	Mohamed Benamar SIAD University Mustapha Stambouli of Mascara
	Co-authors	Y. MOUCHAAL, A. KHELIL, J.C. BERNEDE
96	Image Transmission Through OFDM System	
	Participant	Fatiha MESKINE Djillali Liabes University, Sidi Bel Abbes
	Co-authors	Amina DJIR, Brahim DEHRI
190	Deforestation detection using NRCS features extracted from multi dates SAR images	
	Participant	Abdelkader Horch University Mustapha Stambouli of Mascara
	Co-authors	IMANE MAHFOUF, MOKHTAR BESSEGHIER, HOCINE ABDELHAK AZZEDDINE, ABDERAHMANE LOUNI
310	Detection of Sleep Apnea Using Machine Learning Algorithms Based on The ECG Signal	
	Participant	Leila RIZOUG University Mustapha Stambouli of Mascara
	Co-authors	ISMAHENE BAADJA, NORA BELHAJ, ABDELKADER HORCH, ABDERRAHMANE LOUNI
176	Application of Artificial Neural Network (ANN) to Predict the Electrical Properties of 4H-SiC Schottky Diodes	
	Participant	Mohammed El-Amine BEYOUR University Mustapha Stambouli of Mascara
	Co-authors	MOURAD HEBALI, BENOUMEUR IBARI, OMAR MEDJADJ, REZALI BAGHDADI, ABDELKADER MAACHOU, HOCINE ABDELHAK AZZEDDINE, MENAOUER BENNAOUM

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186	Advances in Power Sources and Power Electronic Converters for Multi-Source Electric Vehicles	
	Participant	Khaled BOUHADEF University Mustapha Stambouli of Mascara
	Co-authors	DJAMEL EDDINE CHAOUCH, HOCINE ABDELHAK AZZEDINE
139	Dual-Band Planar Antenna Design with Complementary Metamaterial Resonators for 5G systems	
	Participant	Nour El Houda BOUKHLIF University Mustapha Stambouli of Mascara
	Co-authors	SAMIR GHOUALI, ABDELFETTAH MIRAOUI
187	Exploring the Security Landscape Internet of Things	
	Participant	Hadjer BOUKHLIF University Mustapha Stambouli of Mascara
	Co-authors	MOUWEFFEQ BOUREGAA, MOHAMMED MOULAY
194	Wireless Technology in Medical Applications: State of the Art, Challenges, and Opportunities	
	Participant	Abderrahmane BENHALIMA University Mustapha Stambouli of Mascara
	Co-authors	BENZERGA FELLAH, SAMIR GHOUALI
185	Revolutionizing Diabetic Retinopathy Detection: A Comprehensive Review of AI Approaches	
	Participant	Imane MAHFOUF University Mustapha Stambouli of Mascara
	Co-authors	ABDELKADER HORCH, BOUALEM MERABET
197	Optimizing Chromatic Dispersion in Fiber with Air-Silica Microstructured (FMAS) for Advanced Optical Telecommunications	
	Participant	Mohammed DEBBAL University Mustapha Stambouli of Mascara
	Co-authors	MOUWEFFEQ BOUREGAA, MOHAMMED CHAMSE EDDINE OUADAH, HICHAM CHIKH-BLED
405	The role of formants and subglottal resonance frequencies for emphatic feature identification in Arabic speech	
	Participant	Abderrahmane LOUNI University Mustapha Stambouli of Mascara
	Co-authors	LEILA RIZOUG, ABDELHAK ZOUGGARET, BOUALEM MERABET, ABDERRAHIM BELMADANI
303	Photo-electrochemical and Physical Properties of the Spinel CuMn2O4 Prepared by Chemical Route: Application to Photodegradation of carminic acid dye	
	Participant	Hafidha BOUCHAABA University Mustapha Stambouli of Mascara
	Co-authors	SARRA GOUDJILI, ZOHRA FERGOUG
17	Control of six-phase two-motor drive machine serie-connected fed by five-level six-phase inverter	
	Participant	Taieb BESSAAD Hassiba Benbouali University Chlef
	Co-authors	ABDERRAHMEN BENBOUALI

VIRTUAL CONFERENCE SESSION

ROOM E: Control Systems, Robotics and Automation (VIRTUAL)

Session Chairmen	**Dr. Soufyane CHEKROUN** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Omar DAHOU** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Benyekhlef KADA** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Boumediene BENABDALLAH SEREIR** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria

	ID	
14:00- 14:15	11	Detecting Bearing Faults by Processing Vibration Signals Participant: Karim BOUAOUICHE, Badji Mokhtar-Annaba University Co-authors: YAMINA MENASRIA, DALILA KHALFA
14:15- 14:30	20	Enhancing Performance and Robustness of Vector Control for Three-Phase Synchronous Reluctance Machine Using Second-Order Sliding Mode Participant: Belkacem SELMA, Hassiba Benbouali University of Chlef Co-authors: ELHADJ BOUNADJA, BACHIR BELMADANI, BOUMEDIENE SELMA
14:30- 14:45	23	Second Order Sliding Mode Control of a Hybrid Excitation Synchronous Generator-based Wind Turbine supplying a DC Load Participant: Walid Mohammed KACEMI, Hassiba Benbouali University of Chlef Co-authors: ELHADJ BOUNADJA, ABDELKADIR BELHADJ DJILALI
14:45- 15:00	21	Modeling and Control of Variable Structure Scheme for Grid-Connected Wind Power Production System with Parallel-Connected Synchronous Reluctance Generators Participant: Belkacem SELMA, Hassiba Benbouali University of Chlef Co-authors: ELHADJ BOUNADJA, BACHIR BELMADANI, BOUMEDIENE SELMA
15:00- 15:15	59	Modeling and control of a twin-rotor drone Participant: Aissa MEKSI, University of Sciences and Technology of Oran Co-authors: Laid ABDELALI
15:15- 16:15		Poster session 1 & Coffee /Tea break
16:15- 16:30	60	Induction Machine Parameters Identification By Using Hybridation Between Genetic Algorithm And Hooke-Jeeves method Participant: El-Ghalia BOUDISSA, Saad Dahlab University of Blida1 Co-authors: F. HABBI, N. DIF, N.E.H. GABOUR, M. BOUNEKHLA

16:30- 16:45	68	Particle Swarm Optimization Algorithm-Based PID Controller for Output Voltage Regulation of Synchronous Generator Participant: El-Ghalia BOUDISSA, Saad Dahlab University of Blida1 Co-authors: FATIHA HABBI, NOUR EL HOUDA GABOUR, MOHAMED BOUNEKHLA AND DIF NAAS
16:45- 17:00	253	Fuzzy Neuronal with Robust Control for Uncertain Nonlinear Systems Participant: Fatima Zohra DAIKH, University Mustapha Stambouli of Mascara Co-authors: MOHAMMED SEGHIR GUELLIL, MOHAMMED AMINE HAMADOUCHE
17:00- 17:15	8	Sliding Mode Control of a Five-Phase Series- Connected Two-Motor Drive Participant: Omar ZOUAID, polytechnic national school of Algiers Co-authors: LAZHARI NEZLI
17:15- 17:30	25	Simplified Control of PMSM Motors with Matrix Converter using SVM Strategy Participant: Fayssal SAIDI, Hassiba Benbouali University Chlef Co-authors: ELHADJ BOUNADJA, ABDELKADER DJAHBAR
17:30- 17:45	85	Speed Sliding Control of Squirrel Cage Motor combined NPC Five Level Inverter Participant: Kheira MENDAZ, University Ain Temouchent Co-authors: BENHADDA YAMINA, YOUNES KHADIDJA

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ROOM F: Telecommunications and its Applications (VIRTUAL)

Session Chairmen	**Dr. Abdelhak ZOUGGARET** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Benzerga FELLAH** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Abderrahmane LOUNI** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Fatima Zohra BOUMEDIENE** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria	
	ID	
14:00- 14:15	18	Millimeter-wave transmission at 90 GHz in a hybrid fiber/FSO communication system using MIMO-FSO channel performance Participant: Samra DEROUICHE, UABT University, Tlemcen Co-authors: SAMIR KAMECHE, HAROUN ERRACHID ADARDOUR
14:15- 14:30	16	Performance Analysis of Hybrid Multiple Access OCDMA/OFDM System Using Spectral Cyclic Shift Code Participant: Mohamed RAHMANI, TAHRI Mohamed University of Bechar Co-authors: ABDELHAMID CHERIFI, GHOUTIA NAIMA SABRI
14:30- 14:45	5	Performance in Power-Domain of NOMA for fifth-generation mobile networks (5G) Participant: Yaakoub BERROUCHE, Université Ferhat Abbas Sétif 1 Co-authors:
14:45- 15:00	28	High Cardinality Optical Multiple Access CDMA Networks Adopting a Novel Incoherent Spectral/Temporal/Spatial Encoding Block Participant: Mohamed RAHMANI, TAHRI Mohamed University of Bechar Co-authors: ABDELHAMID CHERIFI, GHOUTIA NAIMA SABRI
15:00- 15:15	29	Performance Optimization and Comparative Analysis of Reliable Multicast Protocols (AMRHy and DyRAM) in Wireless Mesh Networks Participant: Asma BENMOHAMMED, Université Abdelhamid Mehri Constantine 2 Co-authors: MERNIZ SALAH
15:15- 16:15	Poster session 1 & Coffee /Tea break	
16:15- 16:30	56	A hybrid medical images watermarking technique using DWT and DCT Participant: Rania HAMAMI, LASA laboratory, Badji Mokhtar Annaba university Co-authors: NARIMA ZERMI, LARBI BOUBCHIR, AMINE KHALDI
16:30- 16:45	141	Smart Solutions for Smartphone Repair: Connecting Users with Expert Technicians Participant: Rajaa BENHADI, University Mustapha Stambouli of Mascara Co-authors: SAMIR GHOUALI

16:45- 17:00	124	Implementation of MF - TDMA OTDM-WDM mapping for the DVB-RCS2 system: Functional approach Participant: Meryem Romaissa DJELLOULI, university Djillali Liabes Sidi Bel Abbes Co-authors: SID AHMED CHOUAKRI, ABDELKRIM GHAZ
17:00- 17:15	180	Spectro-Temporal Features for Robust AMR-NB Transcoded Speech Recognition Using Deep Neural Networks Participant: Lallouani OUCHAKOUR, USTHB Co-authors: MOHAMED DEBYECHE
17:15- 17:30	77	An overview on DNA-based cryptography Participant: Djihad DJAA, Djillali Liabes University, Sidi Bel Abbes Co-authors: KHEIREDDINE MEKKAOUI, SOFIANE BOUKLI-HACENE
17:30- 17:45	47	Modeling of Radar Sea Clutter Using the Mixture of Three Weibull Distributions Participant: Sarah LEFAIDA, University Des Frères Mentouri Constantine Co-authors: Faouzi SOLTANI, Amar MEZACHE

ROOM G: Telecommunications and its Applications (VIRTUAL)		
Session Chairmen	**Prof. Larbi SEKHRI** Industrial Computing and Networks Research Laboratory (LIIR), University of Oran **Prof. Amina BENDAOUDI** Djillali Liabes University of Sidi Bel-Abbes, Algeria **Dr. Abdelfettah MIRAOUI** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Mokhtar BOUHALOUANE** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria	
	ID	
14:00- 14:15	34	Design and Performance Evaluation of X-Band Satellite Antenna with Frequency Reconfigurability Using Varactor Diode Participant: Rahma Djaouda TALEB, ABOU BEKR BELKAID University, Tlemcen Co-authors: MOHAMMED ZAKARYA BABA-AHMED, MOHAMMED AMIN RABAH, SIDAHMED BENABBOU, MERIEM IKRAM SOUFI
14:15- 14:30	39	A Log Periodic Dipole Antenna Array SIW Feeding For 5G Millimiter-Wave Applications Participant: Hanane METAHRI, ABOU BEKR BELKAID University, Tlemcen Co-authors: MEHADJI ABRI, MOHAMMED MOULAY, HANAA MOUSSAOUI, NABIL CHERIF

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14:30- 14:45	43	Inovation of a Miniaturized Antenna Array Based On A High Frequency Substrate And Metamaterial Cells Participant: Fayza BOUSALAH, ABOU BEKR BELKAID University, Tlemcen Co-authors: HAYAT BENOSMAN, AMIN MOHAMMED RABAH, ZAKARIYA MOHAMMED BABA AHMED
14:45- 15:00	48	Efficiency of 40 Gbps OTDM-FSO optical system under weather conditions Participant: Haroun Errachid ADARDOUR, UHBC University, Chelf Co-authors: SINGH MEHTAB, IKRAM KHELOUF, C. ABDELHAKIM FELLAGUE
15:00- 15:15	49	Design of a Miniature Circularly Polarized Microstrip Antenna for GNSSS Applications Participant: Hayet BENOSMAN, ABOU BEKR BELKAID University, Tlemcen Co-authors: FAYZA BOUSALAH, AMINE RABAH
15:15- 16:15	Poster session 1 & Coffee /Tea break	
16:15- 16:30	63	Numerical Dynamics Analysis of a Chaotic Third-Order Phase-Locked Loop Participant: Mohammed BENDAOUD, ABOU BEKR BELKAID University, Tlemcen Co-authors: SAMIR KAMECHE, ACHOUR OUSLIMANI
16:30- 16:45	115	Blind Speech Enhancement Based on Adaptive Filtering and Improved Bat Algorithm Participant: Sofiane FISLI, 8 Mai 1945- Guelma University Co-authors: MOHAMED DJENDI
16:45- 17:00	121	Study of a dual polarized RoF OFDM system with WDM-PON structure for mobile broadband networks Participant: chebra abdennour FELLAG, ABOU BEKR BELKAID University, Tlemcen Co-authors: AHMED RIAD BORSALI, MEHDI ROUISSAT
17:00- 17:15	89	Design and Simulation of U-slotted Microstrip Patch Antenna for L, S, C and X Band Participant: Riadh DEGACHI, University of El-Oued Co-authors: GHENDIR SAID
17:15- 17:30	31	A Nano rectangular gold and graphene patch antenna for WBAN applications Participant: Bouchra MOULFI, University of Ain Temouchent Co-authors: SOUHEYLA FEROUANI, DJALAL ZIANI KERARTI AND FATIMA ZAHRA MOUSSA
17:30- 17:45	131	Design and Simulation of a Leaky Wave Antenna Based on Metamaterial Substrate Integrated Waveguide for Millimeter-wave Application Participant: Chaabane SOUMALI, University of Yahia Fares Medea Co-authors: MOUNIR BELATTAR

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26 October 2023

08:30 - 13:00	REGISTRATION

FACE TO FACE CONFERENCE ORAL SESSION (Physical)

ROOM A: Control Systems, Robotics and Automation

Session Chairmen

Dr. Soufyane CHEKROUN
Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria
Dr. Benaoumeur IBARI
Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria
Dr. Mohammed El Amine SENOUSSAOUI
Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria
Dr. Adel BENABBOUN
Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria

	ID	
09:00- 09:15	114	Enhancing Industrial Process Control using multi-layer perceptron (MLP) Participant: Leila BENAISSA KADDAR, University Mustapha Stambouli of Mascara Co-authors: Mohamed El Mehdi ZAREB
09:15- 09:30	171	Velocity observer-based computed torque control for trajectory tracking of uncertain robotic manipulators Participant: Rezali BAGHDADI, University Mustapha Stambouli of Mascara Co-authors: BENAOUMEUR IBARI, MOURAD HEBALI, OMAR MEDJADJ, MOHAMMED EL-AMINE BEYOUR, AHMED FOITIH ZOUBIR
09:30- 09:45	179	Electric Vehicle Wheel-Slip control Based on Sliding Mode Controller Participant: Tabti KHATIR, University Mustapha Stambouli of Mascara Co-authors: MOSTEFAI LOTFI, CHEKROUN SOUFYANE, NEKROUF SADEK, LARBAOUI AHMED
09:45- 10:45		**Poster session 2 & coffee break**
10:45- 11:00	109	Intelligent control strategy of induction motor through Fuzzy Logic Direct Torque Control Participant: Ameur Fethi AIMER, University Dr. Tahar Moulay of Saida, Algeria Co-authors: AHMED HAMIDA BOUDINAR, MOHAMED EL-AMINE KHODJA, AZEDDINE BENDIABDELLAH
11:00- 11:15	257	Full State Feedback Control for Underactuated Nonlinear Mechanical Systems Participant: Anis FEDDAOUI, Badji Mokhtar University Co-authors: M.A. DJEHAF, Y.I. DJILLANI KOBIBI, O. FEZAZI

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11:15- 11:30	132	A comparative analysis of bioreactor system control with the high-order sliding controller and the classic sliding control Participant: Mohamed MESSABIH, University of Science and Technology of Oran, USTO Co-authors: BACHIR DAAOU, ABDERRAHMENE KACIMI, ABDERRAHMENE SNOUSSAOUI
11:30- 11:45	113	Identifying Spatial Risk of Road Accidents Based On Fuzzy Logic Approach Participant: Miloud DRISS, University Mustapha Stambouli of Mascara Co-authors: MOHAMED AMINE HAMADOUCHE, MUSTAPHA LALLAM, OUALID LARGUECHE, SOFIANE ADJLOUT

FACE TO FACE CONFERENCE ORAL SESSION (Physical)

ROOM B: Telecommunications and its Applications

Session Chairmen

Dr. Abdelfettah MIRAOUI
Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria
Dr. Mohamed MOULAY
Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria
Dr. Mokhtar BESSEGHIER
Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria
Dr. Belhassane AHMEDBLAHA
Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria

	ID	
09:00- 09:15	122	Turbulence Effect on RGB Image Transmission over IM/DD Communication-Oriented Free-Space Optical Systems Participant: Amina DJIR, Djillali Liabes University, Sidi-Bel-Abbes Co-authors: Fatiha MESKINE, Mohamed Larbi TAYEBI
09:15- 09:30	119	Deep learning for Microwave Modeling and Design Participant: Nour El Houda Sara SENASLI, University Dr. Tahar Moulay of Saida, Algeria Co-authors: MOHAMMED CHETIOUI, LAMIA SENASLI, MEHDI DAMOU
09:30- 10:30		Poster session 2 & coffee break
10:30- 10:45	252	Compressive Spectrum Sensing for Cognitive Radio: Recovery and Detection Participant: Hadj Abdelkader BENZATER, Ecole militaire polytechnique, Alger Co-authors: DJAMEL TEGUIG, NACERREDINE LASSAMI
10:45- 11:00	95	Design and Performance Analysis of a High-Gain Coaxial Probe-Fed Fractal Antenna for Multiband Applications Using Sierpinski Triangle Geometry Participant: ABDELBASSET AZZOUZ, Dr. Moulay Taher University Saida Co-authors: RACHID BOUHMIDI, ABDELLATIF KHELIL
11:00- 11:15	67	Intelligent Recognition of Digital Modulation on Terahertz Channel Participant: Asmâa OUESSAI, University of Saida Co-authors: ABDELKADER TAMI, HACHEMI SOUMAYA, KOURAT IKRAM

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FACE TO FACE CONFERENCE ORAL SESSION (Physical)

ROOM C: High Voltage Engineering and Applications

Session Chairmen	**Prof. Youcef BENMIMOUN** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Fouad KHERBOUCHE** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Toufik Ahmed HOUARI** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria	
	ID	
09:30– 09:45	**138**	Analyzing Particles Trajectories in a Free-Fall Electrostatic Separator Participant: Mohammed Fethi BEKKARA, University Mustapha Stambouli of Mascara Co-authors: A. BOUARGOUB, A. CHELIH, D. AZZEDDINE, H.A. AZZEDDINE, Y. BENMIMOUN
09:45– 10:00	**81**	Experimental Study of Current Density and Electric Field at Various Temperatures in Electrostatic Precipitator Participant: Hakim AIT SAID, University of Relizane Co-authors: ABDELKRIM LAIFAOUI, BOUZIANE MELIANI, MEZIANE KACI, NIHAD HEBBAR, MASSINISSA AISSOU, HAMOU NOURI
10:00– 10:15	**64**	Multi objective particle swarm optimization with Selective harmonic elimination technique for neutral point clamped multilevel inverters Participant: Nour El Houda GABOUR, University M'hamed Bougara Boumerdes Co-authors: EL GHALIA BOUDISSA, FATIHA HABBI, MOHAMED BOUNEKHLA

CLOSING CEREMONY

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CONFERENCE POSTER SESSION 2

Session Chairmen	**Dr. Abdelkader BESSAKRA** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Isma HATRAF** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria

ID		
35	Planar Micro-Inductor Design for Stand-Alone Photovoltaic DC-DC Converter	
	Participant	Mokhtaria DERKAOUI National Higher School of Telecommunications & ICT of Oran
	Co-authors	YAMINA BENHADDA, AZZEDINE HAMID
36	Monolithic Micro-Transformer Magneto-Thermal Behaviour for MEMS	
	Participant	Mokhtaria DERKAOUI National Higher School of Telecommunications & ICT of Oran
	Co-authors	YAMINA BENHADDA, AZZEDINE HAMID
42	Design and Realization of Power Divider Using Microstrip Stubs Line	
	Participant	Rahmouna EL BOUSLEMTI Ecole Nationale polytechnique d'oran, Maurice audin
	Co-authors	
41	Real-Time Hardware and Software System for Assistance in Daily-life Mobility of Visually Impaired Individuals	
	Participant	Rahmouna EL BOUSLEMTI Ecole Nationale polytechnique d'oran, Maurice audin
	Co-authors	N. BENTYAEB, W. KROUCHI
46	Implementation of GA based selective harmonic elimination pulse width modulation for two level three phase inverters using DSPACE DS1104	
	Participant	Lemya DJAFER Hassiba Benbouali University of Chlef
	Co-authors	Rachid TALEB, Fayçal MEHEDI, Aicha AISSA BOKHTACHE
58	U-Net vs. TransUNet for Weed Segmentation: A Comparative Study	
	Participant	Mohamed El Amine BOUHADJER Djillali Liabes University Sidi Bel Abbes
	Co-authors	SARAH MAZARI, MILOUD CHIKRELMEZOUAR
66	Design of an All-Optical Half Adder Around 1.31 µm Based on Nonlinear 2DPhCRRs	
	Participant	Abdallah IKHLEF Abou Bakr Belkaid University of Tlemcen
	Co-authors	HADJIRA BADAOUI, MEHADJI ABRI
173	Study of the MWT (Metal Wrap Through) heterojunction solar cell with numerical simulation	
	Participant	Nadjet BENADLA Abou Bakr Belkaid University of Tlemcen
	Co-authors	

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129 A Comprehensive Analysis of 433MHz Image Telemetry in Educational CubeSat Context

Participant	Mohammed amine ZAFRANE University of Science and Technologies of Oran
Co-authors	MILOUD BECHEHIMA, AHMED RAMZI HOUALEF

133 Simulation of Harmonic Perturbation for AC Impedance Measurement in a SOFC Cathode

Participant	Ismail BENCHEBIBA University of Chlef
Co-authors	MOHAMED MOSTEFAOUI, NEDJAR YAHIA MOUHAMED AMINE

26 Water Treatment Using a Kit Consisting of Two Identical Series Ozone Generators Powered by a Pv (Photovoltaic) System, Designed for Isolated Areas

Participant	Souhila BOUDJELLA university Mustapha Stambouli of Mascara
Co-authors	M NADJIB BRAHAMI, FATIMA Z BOUDJELLA, SAID NEMMICH, AMAR TILMATINE, MOSTEFA BRAHAMI

70 Investigating the impact of the receiver in protecting two wind turbines with different settings from lightning

Participant	Younes ABDELBARI University of Tiaret
Co-authors	MIMOUNI ABDENBI

116 Modeling and Optimization of an Industrial Roll-type Separator Using the Response Surface Methodology

Participant	Djillali AZZEDDINE university Mustapha Stambouli of Mascara
Co-authors	MOHAMMED FETHI BEKKARA, YOUCEF BENMIMOUN, HOCINE ABDELHAK AZZEDDINE

130 Analyzing Ozone Generation: An Experimental Study of Volume Dielectric Barrier Discharge Generators

Participant	Ibrahim NEDJAR university Mustapha Stambouli of Mascara
Co-authors	A. BENABBOUN, A. MOUFFAK, S. NEMMICH

144 Two-dimensional simulation of dielectric barrier discharge in argon gas at atmospheric pressure

Participant	Nedjar Yahia Mohamed Amine Hassiba Ben bouali University of Chlef
Co-authors	MOHAMED MOSTEFAOUI, ISMAIL BENCHEBIBA, DJILALI BENYOUCEF

147 Automatic Voltage Regulator of a Synchronous Generator by Using Fuzzy Logic

Participant	Yassine ADJISSI Saad Dahlab University, Blida
Co-authors	BOUDISSA EL-GHALIA, BOUNEKHLA M'HAMED

153 Efficiency and Sustainability in Public Transit: The Sidi Bel Abbès Tramway Line Extension and Energy Recovery System

Participant	Houaria BELAHCENE university Mustapha Stambouli of Mascara
Co-authors	O. DAHOU, A. MOUFFAK AND Y.I. DJILANI KOBIBI

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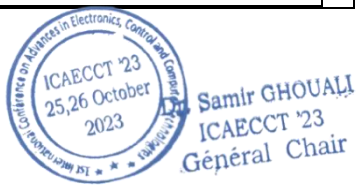
192	Current Control for an Electrostatic Separator	
	Participant	Hocine Abdelhak AZZEDDINE university Mustapha Stambouli of Mascara
	Co-authors	MOHAMMED FATHI BEKKARA, DJILLALI AZZEDINE, YOUCEF BENMIMOUN, ABDELKADER HORCH, MOURAD HEBALI, BENAOUMEUR IBARI, DJAMEL EDDINE CHAOUCH, AHMED ARBAOUI

ROOM D: Control Systems, Robotics and Automation (VIRTUAL)

Session Chairmen		**Dr. Djamel Eddine CHAOUCH** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Adnane MOUFFAK** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Khatir TABTI** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Djillali AZZEDDINE** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria
	ID	
09:00- 09:15	93	Neural Input Output Linearization Control of Induction Motor Participant: kheira MENDAZ, university Ain Temouchent Co-authors: YAMINA BENHADDA, NARIMENE KHADRAOUA
09:15- 09:30	146	Electronic Differential with Sliding Mode Backstepping Control for Vehicle Propulsion System Participant: Ahmed LARBAOUI, University Mustapha Stambouli of Mascara Co-authors: A.BENABBOUN, H. AZZEDINE, K. TABTI, A. ZOGGARET, D. CHAOUCH, Y.I. DJILANI KOBIBI, A. BERROUDJI, K. BOUHADEF
09:30- 09:45	99	Exploiting the Open-Source ROS Framework for Self-Governing Drone Flight Empowered by Artificial Intelligence Participant: Marwa GAIDI, University Mustapha Stambouli of Mascara Co-authors: SOUFYANE CHEKROUN, MOKHTAR ZERIKAT, MOHAMED EL MEHDI ZAREB
09:45- 10:45		Poster session 2 & coffee break
10:45- 11:00	106	Signal Processing-based Fault Detection Participant: Chaima TAMRABET, Badji Mokhtar University, Annaba Co-authors: ELIAS HADJADJ AOUL, MOHAMED TAHAR DEKHMOUCHE
11:00- 11:15	125	Integration and modeling thermal effect in Preisach model associated with the student distribution function using the finite element method Participant: Mourad DAFRI, Badji Mokthar University, Annaba Co-authors: MOURAD NAIDJI, ABDELAZIZ LADJIMI



11:15- 11:30	135	Hybrid GA-ANN model for the prediction of EV Wheel speeds Participant: Medjdoub KHESSAM, Center univ Naama Co-authors: HAZZAB ABDELDJEBAR, MOUNA HADJADJ, REZKALLAH MILOUD, AMBRISH CHANDRA
11:30- 11:45	168	Simulation and control of energy storage systems in the hybrid renewable energies DC-Microgrid: a comparative study Participant: Oussama HAFSI, Ahmed Draia University, Adrar Co-authors: MOHAMED AMINE SOUMEUR, MOHAMED AMINE HARTANI, ABDESELEM CHAKAR, AISSA BENHAMOU, OTHMANE ABDELKHALEK
11:45- 12:00	174	State Estimation for Nonlinear System Using Line Integral Lyapunov Function: A Polytopic Approach with Unmeasurable Premises Participant: Khalida MIMOUNE, university of Biskra Co-authors: KHALIDA MIMOUNE, MOHAMED YACINE HAMMOUDI, SOURI MOHAMED MIMOUNE
12:00- 12:15	202	Fractional Order Adaptive MRAC Controller Design Participant: Souad ANTEUR, University Mustapha Stambouli of Mascara Co-authors: BACHIR BOUIADJRA ROCHDI, MOHAMMED BENMADANI DEBBAT
12:15- 12:30	62	Ear recognition system based on multi-scale feature extraction technique Participant: Lebed Toufik, University of May 08, 1945 Guelma Co-authors: ABDELHAK BOUKHAROUBA

ROOM E: Electronics and its Applications (VIRTUAL)

Session Chairmen	**Prof. Abdelkader EL KEBIR** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Mourad HEBALI** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Menouer BENNAOUM** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Abdelkader BAGHDAD BEY** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria
	ID
09:00- 09:15	12 Optimal Power Flow Solution using QPSODM Algorithm Participant: Mourad NAIDJI, Badji Mokthar University, Annaba Co-authors: MOURAD DAFRI, ABDELBASET LAIB
09:15- 09:30	13 A novel approach for wind farm layout optimization using QPSODM algorithm Participant: Mourad NAIDJI, Badji Mokthar University, Annaba Co-authors: MOURAD DAFRI

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09:30- 09:45	30	Thermal Analysis and Heat Sink Optimization for Power Transistor Cooling Participant: Yamina BENHADDA, USTO, Oran Co-authors: K. MENDAZ, M. DERKAOUI, H. KHARBOUCH
09:45- 10:45		**Poster session 2 & coffee break**
10:45- 11:00	52	High Transmission Dielectric Grating at the Littrow Angle Using Antireflection Coating in the Visible Spectral Range Participant: Mounira ZOUTAT, University of Sciences and Technology Houari Boumediene Co-authors: BERBAR TARIK BOUZIAN
11:00- 11:15	137	Contribution to the Study of the Electrical Behavior of an 1T- 1C-DRAM Memory Cell in 250nm CMOS (3C-SiC) Technology Participant: Jilali BERBARA, Tissemsilt University Co-authors: MOURAD HEBALI, MOHAMMED EL-AMIN BEYOUR, MILOUD ABBOUN ABID, DJILALI CHALABI
11:15- 11:30	188	A New Design of Non-Causal Recursive Digital Filters with a backward-forward realization for both Standard and Non-standard Magnitude Specifications Participant: Adnane MOUFFAK, University Mustapha Stambouli of Mascara Co-authors: HAZZAB ABDELDJEBAR, MOUNA HADJADJ, REZKALLAH MILOUD, AMBRISH CHANDRA
11:30- 11:45	200	Compact modeling of I-V characteristics in AlxGa1- xN/GaN HEMTs Participant: Nawel KERMAS, Tiaret university Co-authors: Driss BOUGUENNA
11:45- 12:00	220	Device Performance of AlGaN/AlN/GaN MIS HEMTs with La2O3 high κ as Gate Dielectric Insulator Layer Participant: Khaled HEBALI, University Mustapha Stambouli of Mascara Co-authors: DRISS BOUGUENNA, ABBES BELOUFA
12:00- 12:15	3	Study of the Energy Levels in The Structure of The Laser Diode GAINP/ALGAINP Participant: Abdelali LAID, Sidi Bel Abbes University Co-authors: ABID HAMZA
12:15- 12:30	118	Modeling and numerical simulation of a of Eco-Friendly CH3NH3SnI3-based Perovskite Solar Cell by the SCAPS1-D simulator Participant: Selma RABHI, University of Medea Co-authors: ABDLEHADI SLAMI, FATIMA ZAHRA SAIDOUNE, KARIMA DADDA
12:30- 12:45	402	PANI/ZnO for Optical Applications: Synthesis and Characterization Participant: Faiza CHOULI, University Mustapha Stambouli of Mascara Co-authors: ABDELGHANI BENYOUCEF, SAMIA DAIKH, AMINA BEKHOUKH

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Samir GHOUALI
ICAECCT '23
General Chair

ROOM F: Biomedical Engineering (VIRTUAL)

Session Chairmen	**Dr. Ibrahim Farouk BOUGUENNA** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Khadidja GOUIZI** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Ahmed BOUDAA** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Abderrahmane LOUNI** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria	
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09:00- 09:15	**57**	ECG-Based Biometric System using TinyML: Implementation and Performance Evaluation on ESP32 Participant: Hatem ZEHIR — Badji Mokthar University, Annaba Co-authors: TOUFIK HAFS, SARA DAAS
09:15- 09:30	**102**	Gender, Age, and Anthropometric Influences on Rotatory Angles in Load Lifting Participant: Ali Khan MOAZZAM — Ziauddin University, Pakistan Co-authors: MYRA ASLAM QURESHI
09:30- 09:45	**104**	Deep Learning System for Automatic Skull Stripping of Human Brain MRI Participant: Abdelhai LATI — University of Kasdi Merbah Ouargla (UKMO) Co-authors: ZAKARIA MOKADEM, DJALILA BELEKBIR, DJIHENE NECIB AND RAYANE DJABOUREBBI
09:45- 10:45	**Poster session 2 & coffee break**	
10:45- 11:00	**134**	A new MRI Brain Tumor Detection and Segmentation approach based on a combination of Thresholding and Generalized Gaussian Mixture Model-EM algorithm Participant: Khalil Ibrahim LAIREDJ — University of DJillali Liabes, Sidi Belabes Co-authors: AMINA BAGDAOUI, SID AHMED BOUCENNA, ZOUAOUI CHAMA
11:00- 11:15	**148**	Cancerous Regions Extraction by Segmentation of Medical Images Participant: Abdellatif BOUZID-DAHO — University of TIZI OUZOU Co-authors: Patrick SIARRY
11:15- 11:30	**152**	Voice pathology detection along feature distribution and normal distribution Study case: Parkinson disease Participant: Djamila MEGHRAOUI — University of Science and Technology Houari Boumediene Co-authors:
11:30- 11:45	**163**	Efficient Statistical Approach for Combining Multimodal Images Using Wavelet Transform Participant: Abdallah BENGUEDDOUDJ — University of bordj bou arreridj Co-authors: MERWAN SAAD SAOUD, TAREK BENSIDHOUM

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ICAECCT '23
Général Chair

11:45- 12:00	170	Internet of Things based Approach for Detecting Diabetes using Deep Learning Models Participant: Messaoud HAMEURLAINE, Tissemsilt Univesrsity Co-authors:
12:00- 12:15	6	Facial kinship Verification using Siamese Neural Network Participant: Abdelhakim CHERGUI, Ouargla University Co-authors: NOUR EL HOUDA BOUAKAL, BRAHIM MELLAH, MESSAOUD HETTIRI, SALIM OUCHTATI
12:15- 12:30	40	Muscle movement detection Participant: Fatima Ezahraa BARKAT, Oran1 Ahmed Ben Bella University Co-authors: DJAMILA BOUBEKEUR, MOHAMMED EL AMINE CHERIET
12:30- 12:45	300	Development of GaN MOS-HEMTs transistors-based biosensors for the detection of a novel SARS-Cov-19 Virus Participant: Faiza MOUFFOKI, University Mustapha Stambouli of Mascara Co-authors: Driss BOUGUENNA
12:45- 13:00	157	Detection of Spasmodic Dysphonia Voice Pathology using Deep Learning Participant: Nardjes MERZOUGUI, University Badji Mokhtar Annaba Co-authors: MOHAMED CHERIF AMARA KORBA, FETHI AMARA

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ROOM G: HIGH VOLTAGE ENGINEERING AND APPLICATIONS (VIRTUAL)

Session Chairmen	**Dr. Youcef Islam DJILANI KOBIBI** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Moulay Idriss CHERGUI** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Mohammed Fethi BEKKARA** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Maamar YAHIAOUI** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Hocine BOUCHEKARA** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria	
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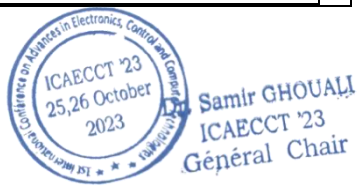
09:15- 09:30	**61**	Utilizing Convex Optimization for State and Unknown Input Estimation in Polytopic Models Participant: Khalida MIMOUNE, University of Biskra Co-authors: MOHAMED YACINE HAMMOUDI, SOURI MOHAMED MIMOUNE
09:30- 09:45	**83**	Dual-Stage Grid Connected Boost-Modular Multilevel Converter with MPPT Fuzzy Logic Controller for Solar System Participant: Imane ALIA, Ziane Achour University, Djelfa Co-authors: IMAD MERZOUK
09:45- 10:45	**Poster session 2 & coffee break**	
10:45- 11:00	**86**	Application of Deep Learning and Markov Chains Approachs for ICS security in Smart Grids based zero trust model Participant: Nousseiba GUERGOURI, University of Constantine 2 Abdelhamid Mehri Co-authors: NABIL SAHLI, MOHAMED BENMOHAMMED, LYES KHOUKHI
11:00- 11:15	**100**	Fuzzy Logic and Neural Network Control of Unified Power Flow Controller Systems (UPFC) Participant: Benyekhlef LAROUCI, University Kasdi Merbah Ouargla Co-authors: AYAD AHMED NOUR ISLEM
11:15- 11:30	**110**	Enhancing the Potential of PEMFC EVs with Cutting-Edge FOPI Control based PDO Algorithm for a Three-Phase Interleaved Boost Converter Participant: Salah OKBA, University of Biskra Co-authors: RAMZI SAADI, MOHAMED YACINE HAMMOUDI, WAIL HAMDI AND ABIR BETKA
11:30- 11:45	**155**	Influence of the ADALINE extraction method with the fuzzy hysteresis band technique applied to the UPQC filter under DC bus fuzzy control Participant: Noureddine KHENFAR, Djillali Liabes University,Sidi Bel-Abbes Co-authors: ABEDLHAFID SEMMAH, SIHAM KHELIFA
11:45- 12:00	**204**	Analysis of Grid-tied Fuel Cell System with Synchronous Reference Frame Control Participant: Yahia FOUGHALI, University of Saida Co-authors: Mohamed MANKOUR, Mhamed SEKOUR



12:00- 12:15	7	Finite Element Modelling of Electric Field Distribution in Point- Barrier-Plane Air Gaps under Positive Lightning Impulse Voltage: Based on Experimental Tests Participant: Mohamed Abdelghani BENZIADA, Ecole Nationale Polytechnique d'Alger Co-authors: AHMED BOUBAKEUR, ABDELOUAHAB MEKHALDI

ROOM H: E-poster Session (VIRTUAL)

Session Chairmen	**Dr. Hocine Abdelhak AZZEDDINE** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Benameur AFIF** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Attaouia BENTAHAR** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria **Dr. Isma HATRAF** Faculty of Sciences and Technology University Mustapha Stambouli of Mascara, Algeria

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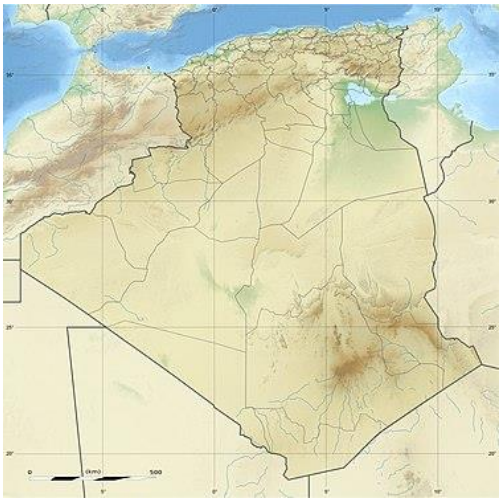
		Topic 1: Control Systems, Robotics and Automation
09:00- 09:10	69	Chaotic Blended Biogeography-Based Optimization for Parameter Estimation of Induction Machine Participant: Naas DIF, University of Djelfa Co-authors: EL-GHALIA BOUDISSA, FATIHA HABBI, MOHAMED BOUNEKHLA
09:10- 09:20	79	Enhancing the Power Quality of Grid-Connected Wind Systems through Multicell Converters Participant: Karim BELALIA, University of Relizane Co-authors: ABDELKADER MOSTEFA, SOFIANE MIHOUBI, HOUARI MERABET BOULOUIHA
09:20- 09:30	160	Backstepping Control of a Direct Driven PMSG wind Turbine Participant: Hamid AOUDJEREGBA, University Mustapha Stambouli of Mascara Co-authors: AHMED TAHOUR
09:30- 09:40	254	Employ the Adaptive Neuro-Fuzzy inference system ANFIS for Improve the Direct Torque Control Participant: Abdelhaq LAOUFI, University Mustapha Stambouli of Mascara Co-authors: MOULAY-IDRISS CHERGUI, SOUFYANE CHEKROUN
09:45- 10:45		Poster session 2 & coffee break
		Topic 2: Electronics and its Applications
10:45- 10:55	27	Thermal Simulation in Intertwined Planar Micro-Transformer Participant: Yamina BENHADDA, USTO, Oran Co-authors: M. DERKAOUI, K. MENDAZ, H. KHARBOUCH

11:05- 11:15	35	Integrated Octagonal On-Chip Inductor in DC-DC Buck Converter for Photovoltaic Applications Participant: Mokhtaria DERKAOUI, National Higher School of Telecommunications & ICT of Oran Co-authors: YAMINA BENHADDA, AZZEDINE HAMID
11:15- 11:25	36	Monolithic Micro-Transformer Magneto-Thermal Behaviour for MEMS Participant: Mokhtaria DERKAOUI, National Higher School of Telecommunications & ICT of Oran Co-authors: YAMINA BENHADDA, AZZEDINE HAMID
11:25- 11:35	37	Using spectroscopic ellipsometry to extract the electrical properties of AZO thin films deposited by DC reactive sputtering in various temperature Participant: Toufik DIB, University of Jijel Co-authors: BOUBEKEUR BIROUK
Topic 3: Telecommunications and its Applications		
11:35- 11:45	92	Localization of Mobile Robots with Global Position System Sensor Participant: Wahiba MENASRI, University of Yahia Farès Médéa Co-authors: AMINA YAHIA, ABDELKADER MORSLI, MOHAMED LAMINE MOUHOUBI, AKIL BATTACHE, ABDEREZZAK GACEMI
11:45- 11:55	154	An Ultrathin Metamaterial Absorber for Conformal Applications at Ka Frequency Band Participant: Ghada MEBARKI, University of Tlemcen Co-authors: NAIMA BENMOSTEFA
11:55- 12:05	87	An IoT-based System to Control the Greenhouse's Microclimate Participant: Noureddine SEDDIKI, University of tahri Mohamed Bechar Co-authors: KAMAL ABDELMADJID MOKEDDEM
Topic 4: Biomedical Engineering		
12:05- 12:15	98	Application Crow Search Algorithm (CSA) with the Empirical Mode Decomposition (EMD) method on Phonocardiogram (PCG) signals for Efficient Noise Suppression Participant: Mohamed ROUIS, University of Djilali Bounaama-Khemis Miliana Co-authors: SALIM SBAA, AYOUB TAALLAH, BOUNIF AOUDA
12:25- 12:35	165	ANN for Medical Image Denoising Participant: Nail ALAOUI, University ZIANE Achour de Djelfa Co-authors: SOFIAN KIRECH, RANIA IBTISSEM BENMLOUKA, SOUAD KSENNA, LAKHDAR BOUHAMLA, ABDALLAH AZZOUZ
Topic 5: High Voltage Engineering and Applications		
12:35- 12:45	259	Multiphysics Simulation of Submicron Particle Behaviour Inside a Novel Multicylinder Electrostatic Precipitator (MCESP) Participant: Fouad Kherbouche, University Mustapha Stambouli of Mascara Co-authors:

The Venue

MASCARA, ALGERIA



ABOUT

Mascara (Arabic: معسكر, romanized: Muʿaskar) is the capital city of Mascara Province. It has 150,000 inhabitants (2008 estimate). It was founded in the 10th century by the Banu Ifran, a Berber tribe and was the capital city of Emir Abd al-Qadir, a leader of the Algerian resistance to early French colonial rule. Mascara is an administrative, commercial and a market centre. Its trade is mostly centered on leather goods, grains, and olive oil, but it is especially famous for its good wine. It has good road and rail connections with other urban centres of Algeria. Relizane is 65 kilometres (40 miles) northeast, Sidi Bel Abbes 90 km (56 mi) southwest, Oran 105 kkm northwest and Saïda 80 km (50 mi) south.

EMIR ABDELKADER

Abdelkader ibn Muhieddine (6 September 1808 – 26 May 1883; Arabic: عبد القادر ابن محي الدين‘Abd al-Qādir ibn Muḥy al-dīn), known as the Emir Abdelkader or Abdelkader El Hassani El Djazairi, was an Algerian religious and military leader who led a struggle against the French colonial invasion of Algiers in the early 19th century. As an Islamic scholar and Sufi who unexpectedly found himself leading a military campaign, he built up a collection of Algerian tribesmen that for many years successfully held out against one of the most advanced armies in Europe.

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