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Abbes LAGHROUR University, Khenchela

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(MSE'22), June 28 & 29th, 2022



Certificate of Participation

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Nonlinear seismic behavior of concrete gravity dams considering dam-foundation interaction
was presented as an *Poster Presentation on Online Mode*

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Co-authors: Mokhtar Messaad, Djamel Ouzendja and Taieb Messaad

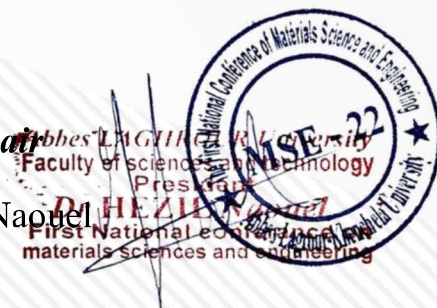
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Title: Nonlinear seismic behavior of concrete gravity dams considering dam-foundation interaction

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ABSTRACT

Keywords:

Concrete gravity dams
Drucker-Prager model
Lagrangian formulation
Nonlinear dynamic analysis

This study examines the earthquake nonlinear response of concrete gravity dams. For illustrative purpose, the Oued Fodda dam, located in Chlef (northwestern Algeria), is selected as an example. A three-dimensional finite element model of dam-foundation rock system is considered in this numerical study, the materially nonlinear analyses for both dam concrete and foundation rock is carried out using Drucker-Prager model. The Lagrangian formulation was used to model the fluid reservoir. According to this study, the maximum displacements and principal stresses are shown by the dam height. The results obtained from linear and non-linear analyses are compared with each other.

1. Introduction

Dams have contributed to the development of civilization for a long time. They will continue to keep the importance in satisfying the ever increasing demand for power, irrigation and drinking water, the protection of man, property and environment from catastrophic floods, and in regulating the flow of rivers. There are several factors affecting the dynamic response of concrete gravity dams to earthquake ground motions. Some of them are the interaction of the dam with the foundation rock and water in reservoir [1-7].

The dam-foundation interaction problem was investigated by Chopra and Chakrabarti [8] Leger and Boughoufalah [9], Nuss et al. [10], Bayraktar et al. [11]. An excellent amount of work on dam-reservoir-foundation interaction in the frequency domain has been carried out by Chopra et al. [12]. Burman and Reddy [13] studied the response of concrete gravity dams to seismic loading considering foundation rock nonlinearity, the results illustrated that nonlinear behavior of foundation rock affects seismic response of dams. The linear and nonlinear earthquake performance of Cine RCC dam was investigated by Kartal and Karabulut [14]. The earthquake performance analyses of Oued Fodda gravity dam considering nonlinearity material was performed by Ouzandja et al [15-17]. Mokhtar et al. [18] studied linear dynamic behavior of dam-reservoir-foundation system under seismic loading using Ansys finite element code.

The current paper exhibits the impact of materially nonlinear model of dam-foundation rock interaction system on the response of concrete gravity dams during

earthquake. For illustrative purpose, a three -dimensional dam-fluid-foundation finite element model is used. The Drucker-Prager model [19] is considered for dam body and foundation rock in the materially non-linear analyses. Hydrodynamic pressure of the reservoir water is modeled by using three-dimensional fluid finite elements based on the Lagrangian method [20]. The different numerical analyses are analyzed using ANSYS code [21].

2. Finite Element Models of System Dam-Foundation Rock

The concrete gravity dam Oued Fodda is located in the north west of Algeria. The geometry of the Oued Fodda dam is illustrated in the fig. 1. The dam-foundation system is investigated using three-dimensional finite element model

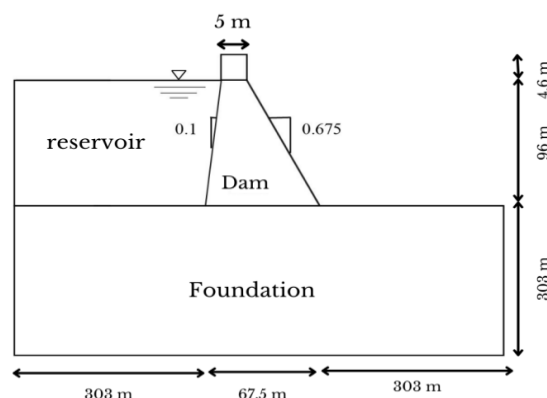


Figure 1 Transverse section and dimensions.

A three-dimensional (3D) discretization by finite elements (figure 2), is used for the modelling of the dam-reservoir-foundation system. A three-dimensional finite element model with 2700 solid finite elements (Solid45) is utilized to model Oued Fodda dam. However, 37050 solid45 finite elements are employed to model foundation rock. Besides, reservoir water has 3600 fluid finite elements (Fluid80). The effect of hydrodynamic pressure is considered according to Lagrangian method [16]. These finite elements models are created using software ANSYS.

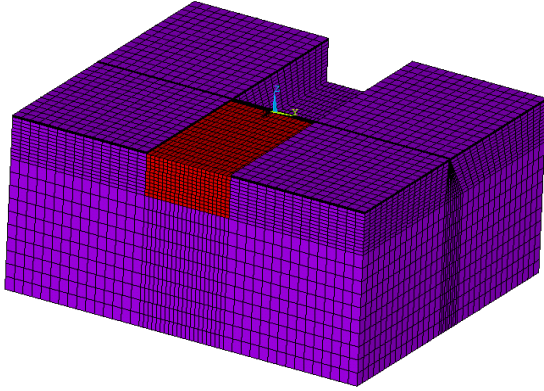


Figure 2 Finite element model discretization

The material properties of Oued Fodda dam including its foundation are reported in Table 1 below

Table 1 Material properties of Oued Fodda concrete gravity dam and water reservoir.

| Material | Material properties | | |
|-------------------|-----------------------------|-----------------|-----------------------------------|
| | Modulus of elasticity (MPa) | Poisson's ratio | Mass density (kg/m ³) |
| Concrete (dam) | 24600 | 0.20 | 2640 |
| Rock (foundation) | 20000 | 0.33 | 2000 |
| Reservoir water | 2070 | 0.49 | 1000 |

3. Dynamic analysis and results

The dynamic behavior of Oued Fodda concrete gravity dam was evaluated using horizontal component of El-Asnam (1980) earthquake acceleration scaled by factor of 2.5 is utilized in analyses (Fig.3). The linear and nonlinear time history analyses are performed using ANSYS program [17]. The maximum horizontal displacements in upstream direction and the maximum principal stresses in the dam along its height are presented.

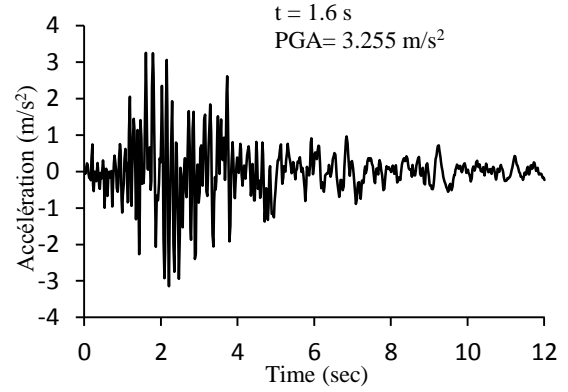


Figure 3 Time history of horizontal acceleration for 1980 El Asnam earthquake record scaled by factor of 2.5.

3.1. Horizontal displacements

Figure 4 represents the distribution of horizontal displacements in upstream faces along the dam crest in linear and nonlinear analyses.

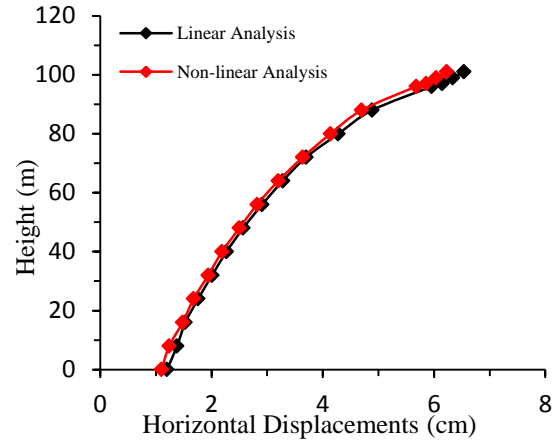


Figure 4 Distribution of horizontal displacements according to linear and nonlinear analyses

Figures 5 compares the time history of horizontal displacement at the upstream middle crest located along dam central axis

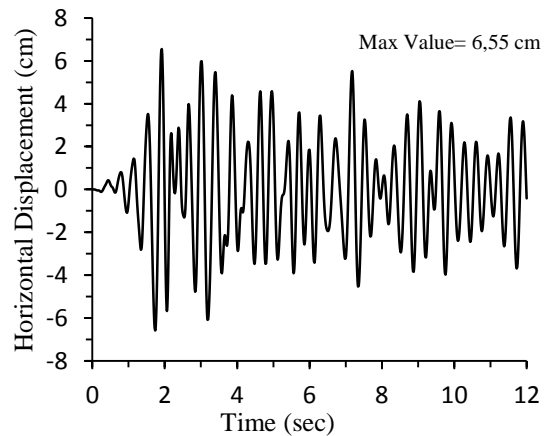


Figure 5 Time history of horizontal displacement at the dam crest for Linear analysis

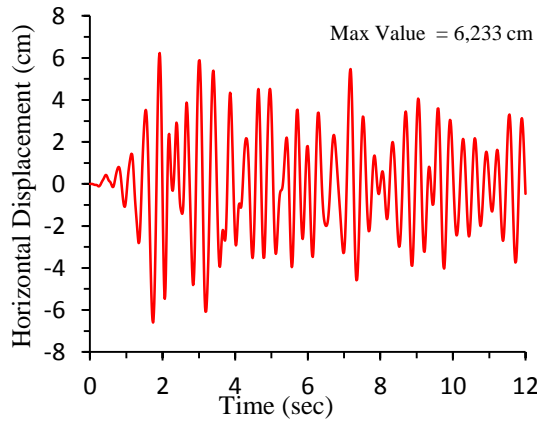


Figure 6 Time history of horizontal displacement at the dam crest for Nonlinear analysis

The maximum horizontal crest displacements are equal to 6.55 and 6.23 cm, respectively, in linear and nonlinear analyses. However, it should be recognized that the use of nonlinear material models at the foundation and dam could increase or decrease the displacements depending on ground motion characteristics, surrounding foundation properties and the dam mechanical properties.

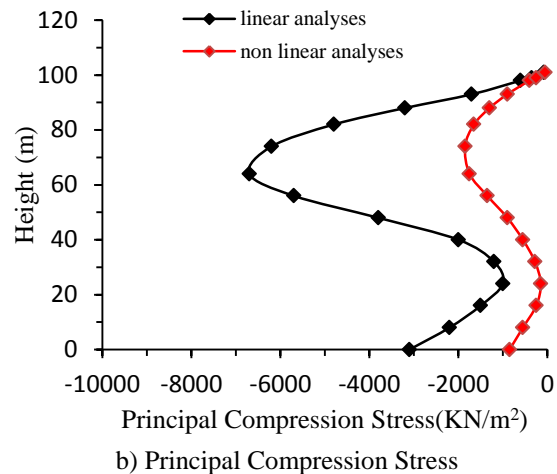
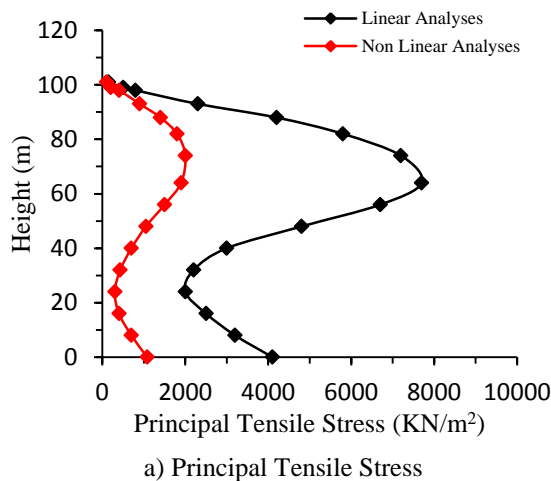


Figure 7 Maximum principal tensile and compressive stresses along dam height (linear and nonlinear analyses)

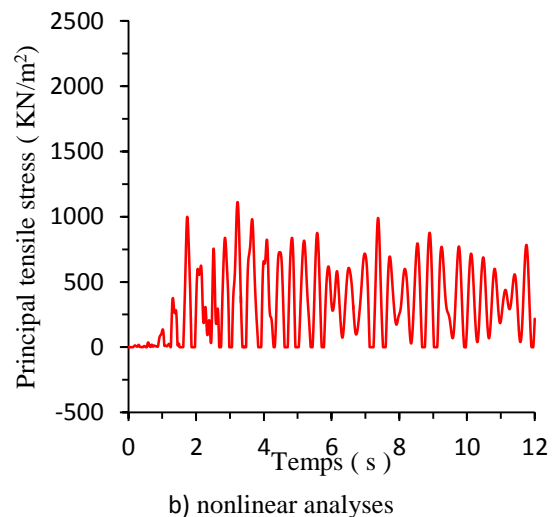
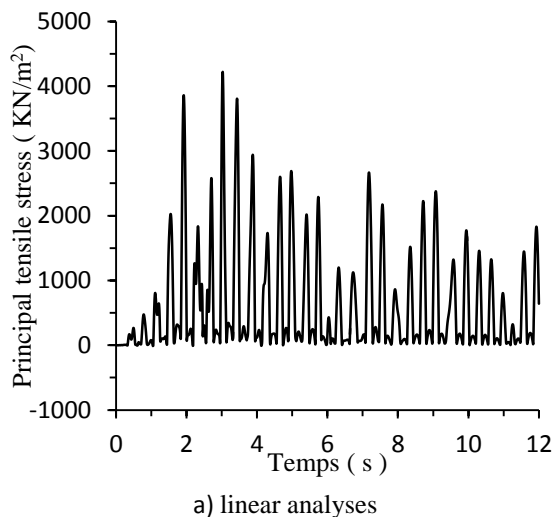


Figure 8 Time history of principal tensile stress at heel of dam

3.2. Stresses

The Figure 7 show the principal tensile and compression stress distributions along the dam height for both models.

The maximum values of principal tensile stresses were observed to be 7700 and 1900 KN/m^2 , respectively, in linear and nonlinear analyses. The maximum values of principal compression stress were observed to be -6700 and -1852 KN/m^2 , respectively, in linear and nonlinear analyses. Therefore, in nonlinear analysis, a decrease of 75 and 72 %, respectively, in the magnitude of principal tensile and compression stresses were noticed.

The Figs 8 and 9 show the time history of principal tensile and compression stresses at heel of dam in linear and nonlinear analyses

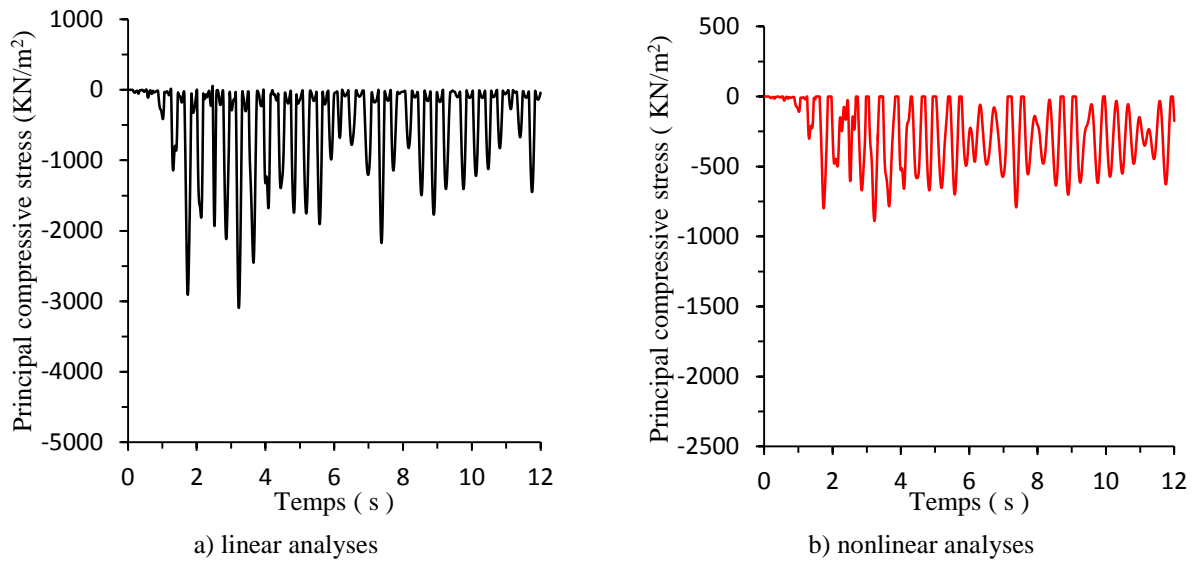


Figure 9 Time history of principal compressive stress at heel of dam

In linear analysis, the principal tensile and compression stresses at heel are 4100 and -3100 KN/m^2 , respectively, while these reduce to 1080 and -850 KN/m^2 , respectively, in nonlinear analysis. Therefore, in nonlinear analysis, a decrease of 73 and 72 %, respectively, in the magnitude of principal tensile and compression stresses were noticed.

4. Conclusion

This paper presents the effect of soil-structure-fluid interaction phenomenon on dynamic behavior of concrete gravity dams. Linear and nonlinear analyses are performed using ANSYS. The Druker-Prager model is used for dam concrete and foundation rock in nonlinear analysis.

From this numerical investigation, one can obtain the following inferences:

1- The tacking into account the materially nonlinear model of dam-foundation rock coupled system can:

- Lead to decreasing the horizontal displacements of the dam.
- decrease significantly the tensile and compressive stresses in the dam

2- In nonlinear analysis, the tensile stresses at the heel reduce but no such reduction is observed at the top of the dam. Upper and lower parts of the dam are still susceptible to cracking in this case.

3- Nonlinear analysis of dam-fondation system leads to low values of displacement at the crest and stresses at the heel and near the neck region of dam.

Thence, it has become important and requested to carry out the materially nonlinear analysis to obtain reliable and accurate results.

5. References

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June 28th, 2022

| | |
|---|--|
| 08:30-09:15 | Opening ceremony |
| 09:30-10:00 | Plenary Conference - Pr.MENAA Rabah Title :Integration of Smart Materials into Innovation Technologies |
| 10:10 -10:45 | Plenary Conference - Dr. BECHIRI Mohamed Title :Phase Change Materials, What Usefulness and What Future |
| 10:45 –11:00 | Coffee break |
| <p>Room 1:</p> <p>Pour participer à la visioconférence, cliquez sur ce lien : https://meet.google.com/irg-hsnx-mck Pour participer par téléphone, composez le +1 424-247-6641 et saisissez ce code : 441 683 341#</p> <p>Renewable Energies (Online)</p> <p>Chemistry and Environment(Online)</p> <p>Session Chairs: Dr. Mahdaoui Rafik ,Dr.Falek Wahiba ,Allouche Fatima & Dr.Bouakkadia Amel</p> | |
| 11:00 – 11:10 | <i>“Photovoltaic Maximum Power-Point Tracking Using”</i> Abdelaziz Aouiche, Abdelghani Djeddi and El Moundher Aouiche |
| 11:10 - 11:20 | <i>“Design of a photovoltaic system model using the DC-DC Buck Converter”</i> Moulay Fatima and Assia Habbati |
| 11:20 – 11:30 | <i>“Parametric study of a retrofitted PV-T panel using a designed water cooling system”</i> Badreddine Benmekhlouf, Cherif Ould-Lahoucine, Amel F. Boudjabi and Rostom Babahani |
| 11:30 – 11:40 | <i>“BOND GRAPH MODELING AND MONITORING OF PV INSTALLATION”</i> Samia Latreche, Mabrouk Khemliche and Samira Boumous |
| 11:50 – 12:00 | <i>“Effect of Defective Three Level NPC on Speed Sliding Neural Artificial Control of Squirrel Cage Motor”</i> Mendaz Kheira and Benhadda Yamina |
| 12:00 – 12:10 | <i>“Numerical study of thermal conductivity enhancement of MgO nanofluids”</i> Fatah Boufoudi, Sofiane Mihoub and Salah Zouaoui |
| 12:20 – 12:30 | <i>“Artificial Neural Proportional Integral Control Wind Turbine Based Doubly Feed Induction Generator and NPC Inverter”</i> Mendaz Kheira, Khadraoua Narimene and Miloudi Houcine |
| 12:30 -14:00 | Déjeuner |
| 14:00-14:30 | Plenary Conference - Dr. DAOUD REZZAK Title :Application d'une Pile à Combustible de Type PEM (Proton Exchange Membrane) dans la Traction Electrique Automobile |
| 14:40 - 14:50 | <i>“Thickness effect on optical transmission properties of Zinc Oxide thin films deposited on different substrates”</i> Ikhlass Benamara, Nesrine Bouchenak Khelladi and Ahmed Sohayb Benabadji |
| 14:50 – 15:00 | <i>“Grid connected hybrid Wind-PV Energy Systems using MPPT algorithm with Battery Backup”</i> Mohamed Haithem Lazreg and Mourad Loucif |
| 15:10 – 15:20 | <i>“Simulation of Vertical Tandem Solar Cell with Four Junctions”</i> Dennai Benmoussa and Boukais Merieme |
| 15:20 – 15:30 | <i>“Study and Characteristics of Transformer Oil, Natural Ester Oil”</i> Amit Kumar |
| 15:30 – 15:40 | <i>“Optimal Location and Size for Distributed Generation Using Harris Hawk's Leader Optimization”</i> Ahmed Tidjani Hachemi, Fares Sadaoui and Salem Arif |
| 15:40 – 15:50 | <i>“Electrochemical study of the inhibition effect of a thiourea derivative on carbon steel corrosion in molar hydrochloric acid</i> Imane Ichchou, Amel Fellah, Lahcene Larabi, Yahia Harek and Houria Rouabhi |
| 15:50 – 16:00 | <i>“THE PHOTO-ABSORPTION SPECTRA OF SnGen (n=1-17) CLUSTERS AND THEIR OPTICAL PROPERTIES”</i> Soumaia Djaadi, Soufiane Mahtout and Kamal Eddine Aiadi |
| 16:00 – 16:10 | <i>“Application of a carbon nanotube - sodium alginate nanocomposite for electrochemical heavy metal ions detection”</i> Dali Mounira and Bouasla Souad |

| | |
|----------------------|--|
| 16:10 – 16:20 | <i>“Kinetic study of adsorption of a food colorant by an adsorbent material from argan tree waste”</i> Taleb Souhila, Oughilas Ahmed, Mimanne Goussem and Fellah Mamoun |
| 16:20 – 16:30 | <i>“Kinetic, isotherm and thermodynamic study of Telon blue textile dye removal from synthetic aqueous solution by using hydroxyapatite and partially hydrolyzed polyacrylamide modified hydroxyapatite.”</i> Soraya Belkaid and Hanane Mahroug |
| 16:30 – 16:40 | <i>“3-Cl BHB: Synthesis, Characterization and In silico prediction of its potential inhibition of SARS-CoV-2 main protease by docking molecular”</i> Tabbiche Abdelkader, Bouchama Abdelaziz and Fadli Khadidja |
| 16:40 – 16:50 | <i>“Study of the effect of pH and particle size of a biochar from pomegranate peel for the elimination of an endocrine disruptor”</i> Boussaid Rihab, Mimanne Goussem, Mokdad Hayat, Fellah Mamoun and Abdallah Touati Manel |
| 16:50 – 17:00 | <i>“THE EFFECT OF REACTION PARAMETERS ON THE ADSORPTION OF ORGANIC POLLUTANTS (HUMIC SUBSTANCE) BY A BIOMATERIAL”</i> Aidi Amel, Djezzar Zohra, Fadel Ammar, Diafi Malika, Abdous Abdelhak and Rahali Hanane |
| 17:10 – 17:20 | <i>“Comparative Study Of The Elimination Of Methylene Blue In Aqueous Solution By Two Adsorbents.”</i> Mokdad Hayat, Mimanne Goussem, Boussaid Rihab, Abdallah Touati Manel and Mamoun Fellah |
| 17:20 – 17:30 | <i>“Combined molecular docking and dynamics simulations studies of 1,3,4-thiadiazoles derivatives as Staphylococcus aureus inhibitors”</i> Nabila Aoumeur, Nouredine Tchouar, Mebarka Ouassaf and Salah Belaidi |
| 17:30 – 17:40 | <i>“Retention Indices of a Series of PAHs: Model QSRR”</i> Youssef Driouche, Meriem Ferfar, Amel Bouakkadia, Laid Bouchaala, Rana Amiri and Hamza Haddag |
| 17:40 – 17:50 | <i>“Isotherms, Kinetics and Thermodynamics of Ibuprofen removal using biochar pepper stem oxidized”</i> Naima Azri, Ammar Fadel, Abdelkader Ouakouak, Rachid Chebbi and Linda Hecini |
| 17:50 – 18:00 | <i>“A STUDY OF THERMAL AND MECHANICAL PROPERTIES OF POLY(HYDROXYBUTYRATE-CO-HYDROXYVALERATE) (PHBV) AND PLANT FIBERS REINFORCED PHBV BIOCOMPOSITES”</i> Brahim Remila, Idris Zembouai, Lynda Zaidi, Naima Touati and Mustapha Kaci |
| 18:00 – 18:10 | <i>“Synthesis and Characterization of Cellulose/ZnO Nanocomposite (CNC/ZnO NPs) from peanut shells.”</i> Hafidha Terea, Djamel Selloum, Abdelkrim Rebiai, Nassiba Allag and Djamila Berra |

Room 2 :

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Mechanical and Civil Engineering (Online)

Metallurgical and Materials Engineering (Online)

Session Chairs: Manaa Rabah , Zedira Hamma & Meddour Belkacem

| | |
|----------------------|--|
| 11:00 – 11:10 | <i>“Bending analysis of multilayer composite sandwich plates: Finite element formulation”</i> Belkaid Khmissi, Deliou Adel, Aouaichia Hamza, Gaagaia Djamel Eddine and Boubir Badreddine |
| 11:10 - 11:20 | <i>“Semi-active control simulation using Herschel–Bulkley model”</i> Khaled Zizouni, Abdelkrim Saidi, Leyla Fali and Ismail Khalil Bousserhane |
| 11:20 – 11:30 | <i>“Reliability and performance of circular concrete-filled steel tubular columns under axial compressive loading”</i> Lydia Messaoudene and Kernou Nassim |
| 11:30 – 11:40 | <i>“Study of the free vibration of E-FGM plates”</i> Habib Hebali, Ali Abbache and Laid Boulefrakh |
| 11:50 – 12:00 | <i>“Unsteady Natural Convection Flow in a Square Cavity Filled with a Porous Medium due to Partial Heating and Cooling at Same Vertical Sidewall”</i> Liamena Hassinet and Mohamed Si-Ameur |
| 12:00 – 12:10 | <i>“Influence of a Hybrid Combination (HDRB-FPS) on the Dynamic Response of a Low-rise Building”</i> Ounis Hadj Mohamed and Bezih Kamel |
| 12:20 – 12:30 | <i>“Durability of self compacting concrete”</i> Sara Bensalem, Ahmed Aderraouf Belkadi and Khoudjia Lyes |
| 12:30 - 14:00 | Déjeuner |
| | Session Chairs: Dr.Touati Soufian, Dr.Beddaf Yacine & Dr.Rebai Billel |
| 14:40 - 14:50 | <i>“Study of the performance of bituminous concrete based on local sand”</i> Mohamed Melik, Said Abbani and Nabil Kebaili |
| 14:50 – 15:00 | <i>“Application of Design of Experiment in geotechnical problems “Case of soil nailed wall””</i> |

1st National Conference on Materials Sciences and Engineering (MSE'22)

28-29 June 2022, Khenchela

(Online)

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|----------------------|---|
| | Fadila Benayoun, Souhila Bekkouche Rehab and Marwa Feligha |
| 15:10 – 15:20 | <i>“Using RMM for Normal Depth Computation in a Rectangular Channel”</i> Sabah Sehtal and Bachir Achour |
| 15:20 – 15:30 | <i>“Experimental and numerical study of the performances of a screed, which was developed, based on Algerian diatomite”</i> Housseem Hachemi, Chakib Seladji and Djahida Mahmoudi |
| 15:30 – 15:40 | <i>“3D Numerical Analysis of Pile Response Due to Tunnelling-Induced soil Movement”</i> Tamir Amari and Mohamed Nabil Houhou |
| 15:40 – 15:50 | <i>“Matrix Cracking Behaviour Within Metal Matrix Composites”</i> Metehri Aicha and Serier Boualem |
| 15:50 – 16:00 | <i>“Effect of compaction stress on compressed earth bricks made of excavated soil”</i> Kahina Messara, Samia Djadouf and Nasser Chelouah |
| 16:00 – 16:10 | <i>“Study on morphological, structural and magnetic properties of nanocrystalline Fe₆₀Al₃₅Mg₅ powders obtained by high energy ball milling”</i> Ali Hafs and Toufik Hafs |
| 16:10 – 16:20 | <i>“Tuned electronic and magnetic properties in 3d transition metal doped MoI₃ monolayer: a first-principles study”</i> Chaouki Ouettar and Hakima Yah |
| 16:20 – 16:30 | <i>“Bending analysis of functionally graded porous plates for a gradation model exponential-law (E-FGP)”</i> Otmene Zerrouki, Slimane Merdaci and Adda Hadj Mostefa |
| 16:30 – 16:40 | <i>“Investigation of two-layer binary composite materials based on epoxy resin and calcium titanate using microwave test bench”</i> Delfouf Rabah, Bouzit Nacerdine, Tlili Salah and Djouada Djahida |
| 16:40 – 16:50 | <i>“Effect of the synthesis medium on the Preparation of Hydroxyapatite by the Sol-Gel method”</i> Lila Ouzougoua, Djahida Sidane and Hafit Khireddine |
| 16:50 – 17:00 | <i>“Synthèses chimique et électrochimique d'oxyde de graphène et d'oxyde de graphène réduit à partir de graphite recyclé”</i> Cheraïtia Abdallah, Guemihi Nedjma and Laghrib Roquiya |
| 17:00 – 17:10 | <i>“Refractive Index Sensitivity of Oxide Coated Metallic Nanoparticles by the Discrete Dipole Approximation Method: Effect of Particle Size, Core Material, Shell Thickness and Shell Composition”</i> Adil Bouhadiche, Soulef Benghorieb and Sabah Benzeghda |
| 17:10 – 17:20 | <i>“Microstructure and properties of electrodeposited Zn coatings”</i> Saida Marmi, Abdelouahad Chala, Hayat Marmi, Chahinez Siad and Souhila Marmi |
| 17:20 – 17:30 | <i>“Preparation and characterization of forsterite (Mg₂SiO₄) from SiO₂ and MgO nanopowders”</i> Khadidja Laziri, Zeyneb Dilmli, Smail Lamara, Foudil Sahnoune and Menad Heraiz |
| 17:30 – 17:40 | <i>“Experimental study of particle behavior in a free-fall electrostatic separator (Recycling of plastic waste)”</i> Mimouni Chahinez |
| 17:40 – 17:50 | <i>“The impact of nitrogen doping on the magneto-electronic and optical properties of strontium sulfide”</i> Warda Elaggoune, Athmane Meddour and Chahrazed Bourouis |
| 17:50 – 18:00 | <i>“A nature-friendly lubricant to improve the wear performance of CrVN coated hard materials used in oil and gas drilling”</i> Khokha Lalaoui et al |
| | First day closing |

| June 29th, 2022 | |
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| 08:30 – 09h15 | Plenary Conference - Pr. DERFOUF Semcheddine Elaboration de Nouveaux Matériaux Biocomposites à Base de Fibres Végétales et Etude de L'effet de Concentration de ces Fibres sur les Propriétés Mécaniques de ces Biocomposites. |
| 09h15-10h00 | Plenary Conference - Pr. KAABACHE Khatima |
| 10:15 –11:00 | Coffee break |
| <p><u>Room 1:</u></p> <p>Pour participer à la visioconférence, cliquez sur ce lien : Pour participer par téléphone, composez le +1 424-247-6641 et saisissez ce code : 441 683 341#</p> <p>Renewable Energies (Online)</p> <p>Chemistry and Environment(Online)</p> <p>Session Chairs: Dr. Mahdaoui Rafik ,Dr.Falek Wahiba ,Allouche Fatima & Dr.Bouakkadia Amel</p> | |
| 11:00 – 11:10 | <i>"Vibration Signals Feature Extraction Approach of Bearing Faults to Induction Motor"</i> bla Bouguerne, Aziz Boukadoum and Tahar Bahi |
| 11:10 - 11:20 | <i>"Adsorption of Hazardous Methylene Blue from water media by Biochar Using the Shells of Apricot Kernels"</i> Fadel Amar, Azri Naima and Chebbi Rachid |
| 11:20 – 11:30 | <i>"Ab-initio study of structural, elastic, electronic and optical properties of the Ti2NiIn Heusler alloy"</i> Rabah Moussa, Mohamed Kharroubi and Rabah Khenata |
| 11:30 – 11:40 | <i>"Effect of variation of latitude on the performance of inverted perovskite CsPbI2Br solar cell"</i> Abla Guechi and Mohamed Chegaar |
| 11:50 – 12:00 | <i>"A Comparison of Potable Water Production Between Two Cities in the Algeria"</i> Irki Sara, Nachida Kasbadji-Merzouk, Salah Hanini and Djamel Ghernaout |
| 12:00 – 12:10 | <i>"Forecasting of Wind Power Generation Using Machine Learning"</i> Hassina Madjour and Hanane Zermane |
| 12:20 – 12:30 | <i>"Design of an Optimal Fractional Order PID Controller for a Photovoltaic Solar Energy System"</i> Belgacem Herissi and Labidi Herissi |
| 12:30 -14:00 | Déjeuner |
| 14:00-14:30 | Plenary Conference - Dr.BRAHIMI Salim |
| 14:40 - 14:50 | <i>"Study of a grid connected photovoltaic generator at Tahri Med University Bechar"</i> Habbati Bellia and Moulay Fatima |
| 14:50 – 15:00 | <i>"Improving the performance of solar still by using thermal energy storage of phase-changing material"</i> Abderachid Trad and Djahida Mahdi |
| 15:10 – 15:20 | <i>"Electrodeposition of ZnO thin film with hydrophilic property"</i> Zehira Belamri and Djamel Hamana |
| 15:20 – 15:30 | <i>"Optimum Venturini Method Based on PI Controller for Matrix Converter applied to wind power system"</i> Aziz Boukadoum, Hichem Merabet, Tahar Bahi and Abla Bouguerne |
| 15:30 – 15:40 | <i>"The fuzzy logic algorithm application's for fault detection photovoltaic systems"</i> Younes Lahiouel, Samia Latreche and Mabrouk Khemliche |
| 15:40 – 15:50 | <i>"Structural, electronic and optical modeling of perovskite MgHfO3"</i> Kawther Fatima Zohra Ezzine, Mohamed Chams Eddine Ezzine, Insaf Chebbab and Fatma Litimein |
| 15:50 – 16:00 | <i>"Synthesis and characterization of ZnO NPs using a Doliprane plant and Corrosion inhibitors effect"</i> Messast Sarah, Abderrahmane Sihem, Bouasla Nabila, Laikous Mouhamed and Chaabna Hanane |
| 16:00 – 16:10 | <i>"Theoretical Study of the Observed Regioselectivity of Some Monomers"</i> Boulanouar Messaoudi, Samir Benykhlef and Zineb Benaouda |
| 16:10 – 16:20 | <i>"Adsorption of nitrate on a bio-adsorbent prepared by date pits"</i> Djezzar Rima, Seghairi Nora and Boukhalfi Asma |
| 16:20 – 16:30 | <i>"Study of the biosorption of food coloring by a marine biomass"</i> Manel Abdallah Touati, Goussem Mimanne, Hayet Mokdad, Rihab Boussaid and Mamoun Fellah |
| 16:30 – 16:40 | <i>"Analysis of volatile components and inorganic elements in aerial parts from two species of Lamiaceae family collected from the Aures zone"</i> Hamza Fadel |

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| 16:40 – 16:50 | <i>“Removal of paracetamol from aqueous solution by adsorption using Montmorillonite porous composite as a low cost adsorbents”</i> Leila Chabane, Leila Chabane, Omar Bouras, Nesrine Aid and Meriem Harazi |
| 16:50 – 17:00 | <i>“Elimination of Ketoprofen by photodegradation and CD”</i> Keniche Assia, Khelassi Asma, Yassemina Soltani and Aboura Amina |
| 17:00 – 17:10 | <i>“2D-QSAR and Molecular Docking Study on Benzimidazole-Based Series Compounds to understand the binding mechanism of AchE Inhibitor”</i> Aicha Kerassa, Nour-Elhouda Derki and Karima Zitouni |
| 17:10 – 17:20 | <i>“Artificial Neural Control Wind Turbine Based Doubly Feed Induction Generator and NPC Inverter</i> <i>Khadraoua Narimene and Mendaz Kheira”</i> |

Room 2 :

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Mechanical and Civil Engineering (Online)

Metallurgical and Materials Engineering (Online)

Session Chairs: Pr. Manaa Rabah , Dr. Walid Badla & Dr. Mohamed Tabet

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| 11:00 – 11:10 | <i>“Stability of Anchored Retaining Walls With Pseudo-Static Method”</i> Fatima Benamara, Chiraz Kechkar, Ghania Nigri, Messaouda Bencheikh and Marwa Feligha |
| 11:10 - 11:20 | <i>“Intelligent FOPID Controller in Reducing Road Vibration for an Active Suspension System”</i> Zineb Boulaaras, Abdelaziz Aouiche and Kheireddine Chafaa |
| 11:20 – 11:30 | <i>“Fixed boundary solver for Grad Shafranov equation with nonlinear toroidal current”</i> Amina Djellouli and Assia Rachida Senoudi |
| 11:30 – 11:40 | <i>“Characterization of permanent magnetic dc motor by using SIMSCAPE”</i> Ghلام Karima and Oukli Mimouna |
| 11:50 – 12:00 | <i>“Analysis and prediction of earth dam behavior using monitoring measures and artificial neural network”</i> Leyla Harbi, Nadia Smail and Boucherit Rouissat |
| 12:00 – 12:10 | <i>“Damages Identification in Cantilever Beam using Dynamic Strain- based Damage Indicators”</i> Rachid Azzi and Farid Asma |
| 12:20 – 12:30 | <i>“Thermomechanical bending response of composite material with specific properties functionally graded (FGM)”</i> Ahmed Zitouni |
| 12:30 - 14:00 | Déjeuner |
| | Session Chairs: Dr. Meddour .B & Dr. Mohamed Tabet |
| 14:40 - 14:50 | <i>“Effect of temperature on the mechanical properties of reactive powder concrete”</i> Mounira Chadli and Sara Rais |
| 14:50 – 15:00 | <i>“Nonlinear Vibration Analysis of Damped Civil Engineering Structures”</i> Ali Abbache, Habib Hebali and Laid Boulefrakh |
| 15:10 – 15:20 | <i>“Influence de l'interaction sol-structure sur le comportement hydrodynamique d'un réservoir surélevé en béton armé”</i> Amar Aliche, Karima Yousfi, Kahina Ben Amara, Hocine Hammoum and Karima Bouzelha |
| 15:20 – 15:30 | <i>“comportement mécanique et physique du masque d'étanchéité du barrage en remblai- étude expérimentale du barrage bouhnia - Algérie”</i> Bounaadjia Zoulikha and Djemilli Lakhdar |
| 15:30 – 15:40 | <i>“New Approach to Mitigate the Seismic Response of a Low-Rise Building through an FPS Passive System”</i> Ounis Hadj Mohamed and Bezih Kamel |
| 15:40 – 15:50 | <i>“Seismic Structure-Soil-Structure Interaction (SSSI) between piled neighboring bridges: Influence of height ratio”</i> Mohanad Alfach |
| 15:50 – 16:00 | <i>“Comparative Evaluation Of The Performances Of Two Heat Exchangers”</i> Kouidri Ikram, Kaidameur Djilali and Zahraoui Mehdi |
| 16:00 – 16:10 | <i>“Mineralogy and morphology study of dunes sand samples taken from Touggourt region of Algeria southeast”</i> Benchaâ Sayhia, Bougoffa Mohammed Seyf Eddine, Achouri Abderrahim and Gheriani Rachid |
| 16:10 – 16:20 | <i>“synthesis, characterization of nickel ferrite spinel (NiFe₂O₄) and its photocatalytic activity”</i> arimene Aoun, Hadjira Boucheloukh and Tahar Sehili |
| 16:20 – 16:30 | <i>“Effect of Copper Percentage on Structural and Mechanical Behavior of Ternary Ti-Ni-Cu Shape Memory Alloy”</i> Zineb Sadaoui, Latifa Kahloul, Abdennour Hebbaz and Soumaya Meddah |
| 16:30 – 16:40 | <i>“Elaboration and characterization of the nanostructured Cr₇₀Co₃₀ powders mixture”</i> Achraf Djallel-Eddine Sid |

1st National Conference on Materials Sciences and Engineering (MSE'22)

28-29 June 2022, Khenchela

(Online)

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| 16:40 – 16:50 | <i>“Response Surface Optimization and Predictive Modelling of the Slip Casting Rate of Some Nigerian Clays”</i> Francis Edoziuno, Cynthia Nwaeju and Jerome Odo |
| 16:50 – 17:00 | <i>“Etude théorique par dynamique moléculaire du comportement à hautes pressions de la roche carbonatée Cerussite”</i> Brahim Khalil Benazzouz |
| 17:00 – 17:10 | <i>“(2+1)D Graphene in Non-Commutative Geometry”</i> Lakhdar Sek |
| 17:10 – 17:20 | <i>“Thermal dynamics in gold nanoparticle by ultra short pulse laser”</i> Selma Mediene and Assia Rachida Senoudi |
| 17:20 – 17:30 | <i>“Modeling of the lightning strike in the Souk Ahras area by ATPdraw”</i> Boumous Samira, Boumous Zouhir, Latréche Samia and Nouri Hamou |
| 17:30 – 17:40 | <i>“Elaboration and structural Characterization of perovskite type oxides La1-xAgxAlO3”</i> Lynda Djoudi, Mona Hasnaoui and Mahmoud Omari |
| 17:40 – 17:50 | <i>“Replacements Cement with Polymeric Resins and Natural Sand with Construction Waste to Reduce CO2 Emissions and Reused Solid Waste to Manufacturing Eco-Friendly Polymeric Concrete”</i> Mohammad Tahir |
| 17:50 – 18:00 | <i>“Properties of Polycarbonate/Poly (Ethylene Terephthalate) Blends”</i> Ouahiba Meziane, Abderrahim Bensedira and Melia Guessoum |
| 18:00 – 18:10 | <i>“Influence of immersion time on microstructural and morphological properties of copper oxides”</i> Amiour Leila and Aouabdia Youcef |
| | CLOSING CEREMONY |