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CERTIFICATE OF PARTICIPATION

The president of the **First National Conference on Science & Technology (1st NCST22)** certifies that:

Mokhtar Messaad

has delivered a poster communication entitled:

Effects of Dam–Foundation Contact Conditions on two-dimensional seismic responses of Concrete Gravity Dams

Co-author(s): Djamel Ouzendja , Mohamed Habib Daoudi , Taieb Messaad



Effects of Dam–Foundation Contact Conditions on two-dimensional seismic responses of Concrete Gravity Dams

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Abstract. This paper presents the effects of dam–foundation contact conditions on seismic performance of concrete gravity dams. For illustrative purposes, the Oued Fodda concrete gravity Dam, located in Chlef (northwestern Algeria), is selected as an example. In addition, a parametric study based on the friction and bonded contact condition is carried out. The Druker–Prager model is employed in the nonlinear analyses for concrete dam and rock in the foundation. The hydrodynamic pressure of the reservoir water is modeled as added mass using the Westergaard approach. The contact interface in dam–foundation interaction is modeled by contact elements which represent the friction contact. Surface-to-surface contact elements based on the Coulomb's friction law are used to describe the friction. These contact elements use a target surface and a contact surface to form a contact pair. The numerical results have shown that the sliding displacement in friction model decreases the principal stresses in the dam body.

1 Introduction

Failure of a concrete gravity dam during an earthquake could occur as a sliding instability along an earthquake-induced crack, as long as, the concrete dam and foundation rock have two different material properties; their joining presentation should be realized with different nodes at interface zone. This is usually supplied by employing friction contact at the interface which allows the modeling of dam sliding on its foundation due to presence contraction joints at dam–foundation rock interface.

In the last years, the development in contact mechanics [1–4] has made it possible to analyse the problem more effectively. Several studies were carried out on the effect of conditions of contact in the interface between the concrete gravity dam and its foundation rock

[5–7]. Hall et al [8] investigated the sliding failure of pine Flat dam during earthquake. The study illustrated that there is a permanent deformation at the base due to dam sliding. Other investigators studied the seismic sliding at the concrete gravity dam base using analytical methods [9] and empirical laws [10]. Arabshahi and Lotfi [11] used interface elements to present sliding at dam base. The seismic stability of concrete dams under earthquake ground motion considering the impact of nonlinearity and model type of the foundation was investigated by Hariri-Ardebili [12] and Hariri-Ardebili and Mirzabozorg [13]. The earthquake response of a concrete gravity dam depends upon its contraction joints with foundation, which are represented by contact elements. This study aims to present the effects of dam–foundation contact conditions on the seismic performance of concrete

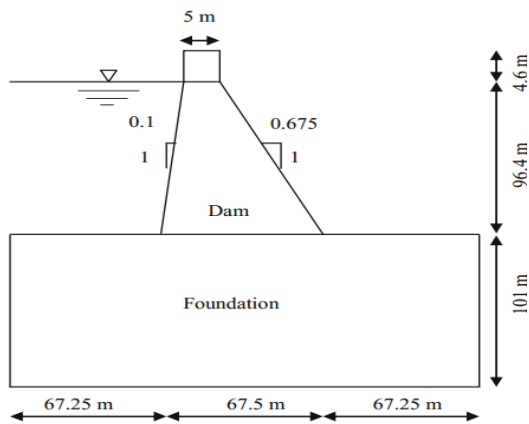
gravity dams. The OuedFodda dam is taken into account in the numerical analyses. For this purpose, two-dimensional finite element model of dam-foundation rock system is employed. The hydrodynamic pressure of the reservoir water is modeled utilizing the added mass concept [14]. In the nonlinear analysis, the Drucker-Prager model [15] is used for dam concrete. Bonded and friction contact are considered in the joints along dam-foundation rock interface. Surface-to-surface contact elements based on the Coulomb's friction law are used to describe friction using ANSYS software [16].

2 Numerical Models

2.1. Material properties

The OuedFodda concrete gravity dam is located approximately 20 km of OuedFodda (Chlef), in northwestern Algeria, and founded over a massive limestone known as "KoudiatLarouah". The reservoir is mainly used for irrigation purposes. The capacity of the dam is 125.5 hm³. The maximum height "H" and base width of the dam are 101 m and 67.5 m, respectively. The dam crest is 5 m wide and the maximum height of the reservoir water is considered as 96.4 m. The dimensions of the dam-foundation system are shown in Figure 1.

Fig.1. Transverse section and dimensions



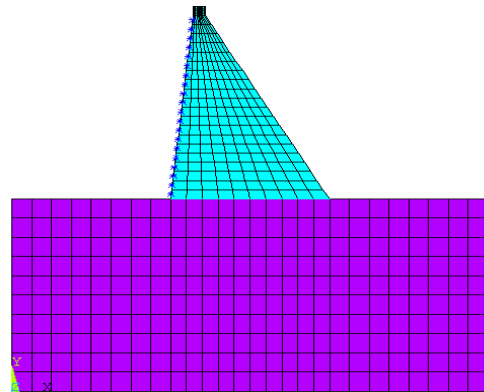
The material properties of OuedFodda dam including its foundation are reported in Table 1 below. The Drucker-Prager model [15] is used in nonlinear analysis for concrete of the dam and fondation soil. The cohesion and the angle of internal friction of the dam body and fondation rock are assumed as to be 2.50 Mpa and 35°, respectively. The concrete of the dam has tensile strength of 1.6 MPa and compressive strength of 20 MPa.

2.2 Finite element model of dam-foundation system

The dam-foundation system is investigated using the two-dimensional finite element model shown in Figure 2. The dynamic effect of the reservoir during the analysis is modeled by the Westergaard approach [14] based on the

added mass concept. This finite element model is created using software ANSYS [16].

Fig. 2. Finite element discretization of dam-foundation system



A two-dimensional (2D) finite element model with 500 plane solid elements (PLANE 82) is used to model the dam and the foundation. A finite element model with 20 structural masses (Mass21) is used to model the reservoir water. The solid elements used in the analysis have eight nodes and 2 x 2 integration points.

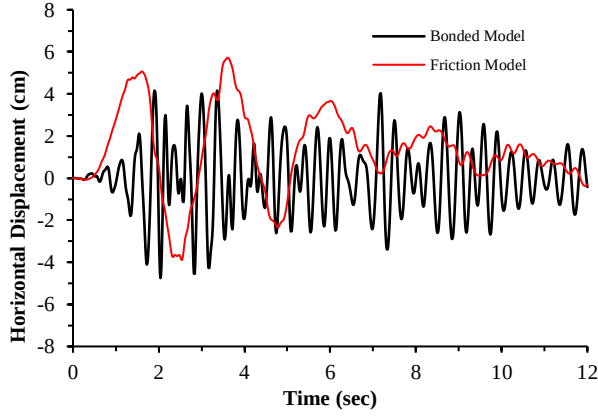
3 Results and Discussion

This study presents the results of a numerical investigation into the effect of dam–foundation contact conditions on the seismic behavior of Oued Fodda concrete gravity dam. For this purpose, the horizontal component of the 1980 El Asnam 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.

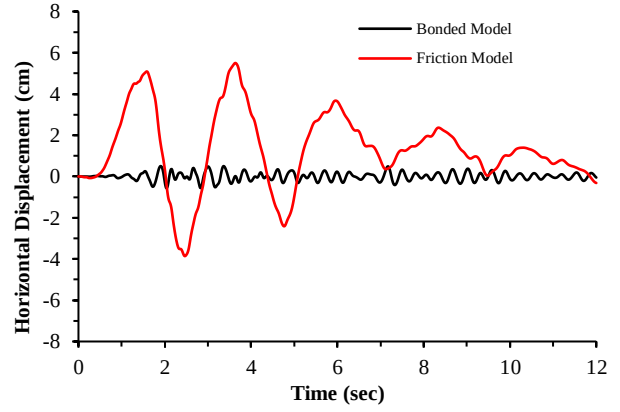
Table 1.Material properties of Oued Fodda concrete gravity dam

Material	Material Properties		
	Modulus of Elasticity (MPa)	Poisson's Ratio	Mass Density (kg/m ³)
Dam	24600	0.20	2640
Foundation	20000	0.33	2000

Fig. 5. Time history of horizontal displacement using bonded and friction contact



a) at crest of the dam



b) at heel of the dam

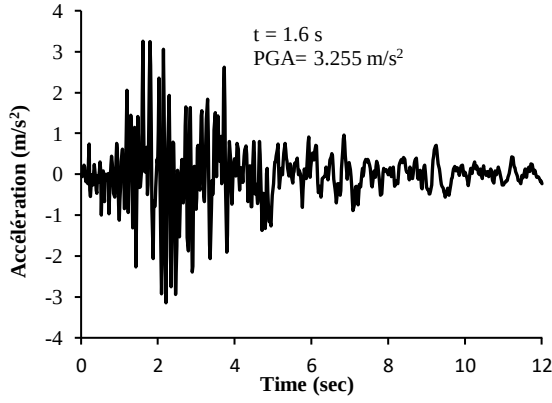


Fig.3. Time history of horizontal acceleration for 1980 El Asnam earthquake record scaled by factor of 2.5

3.1 Displacements

The Figure 4 represents the maximum horizontal displacements of dam in upstream direction for bonded and friction contact models

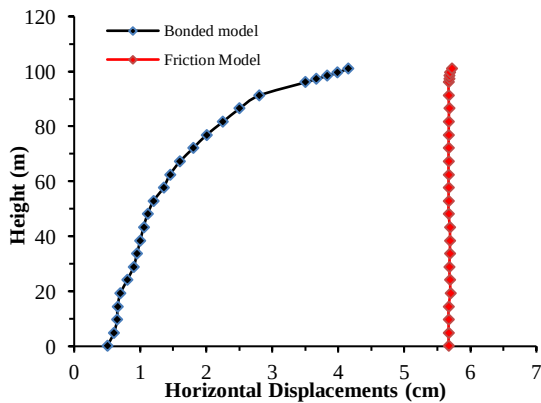


Fig.4. Maximum horizontal displacements using Bonded and Friction contact model

Transient analysis (Fig. 4) indicates that the presence of friction contact in dam–foundation interface increases the maximum horizontal displacements along the dam height compared to case where bonded contact elements are used. It is clear that when friction contact is used, sliding phenomenon is observed.

Fig. 5 represents the time history of horizontal displacement at the dam crest for both two models. The horizontal displacement at the crest decreases from 5.72 cm for friction contact model to 4.15 cm for bonded contact model. On the other hand, the time history of sliding displacement at the dam heel is depicted. The sliding displacement at the heel is negligible (0.5 cm) for bonded contact model, while this is 5.67 cm for friction contact model due to existence of contraction joints along dam–foundation rock interface decreasing the contact zone rigidity.

3.2 Stresses

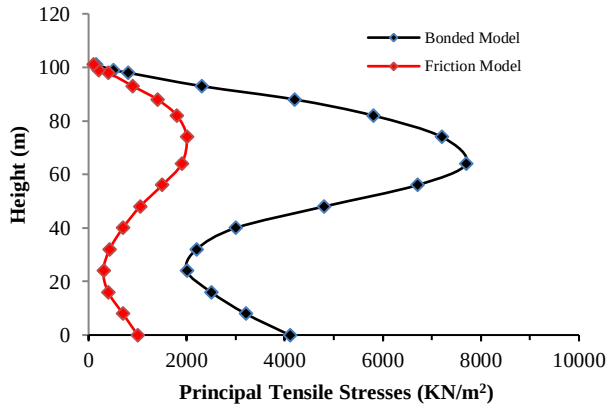
The tensile and compressive principal stresses distributions along the dam height are shown in figure 6

According to the analysis, the tensile and compressive principal stresses clearly increase in bonded contact model. The maximum values of tensile principal stress were noticed to be 7710 and 2015 kN/m², respectively, for models bonded contact and friction contact. The maximum values of compressive principal stress were noticed to be -6700.12 and -1850.48 kN/m², respectively, for models bonded contact and friction contact. Therefore, for model with friction contact, a decrease of 73.8 and 72.3 %, respectively, in the magnitude of tensile and compressive principal stresses was noticed.

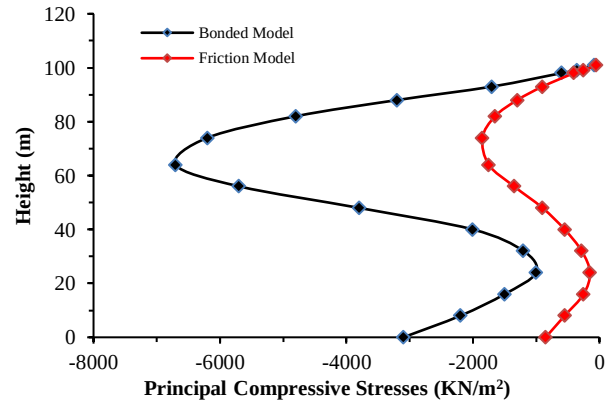
Figure 7 shows the time history of tensile and compressive principal stresses at heel region in the analysis. In general, the sliding displacement of the dam along its base leads in decreasing the principal stresses at heel in comparison with bonded contact model.

as sliding displacement decreases the stresses in the dam body.

Fig. 6. Distribution of principal stresses along dam height using bonded and friction contact



a) tensile stress



b) compression stress

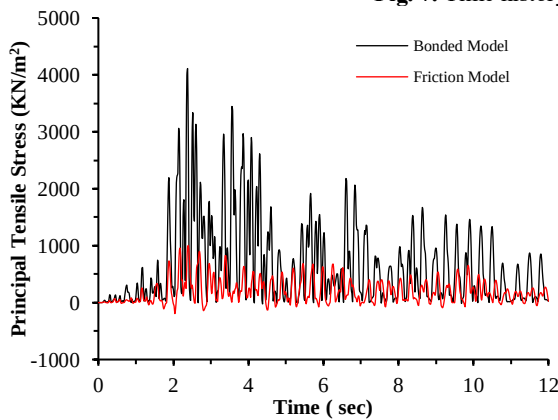
4 Conclusions

This study aims to present the effects of dam–foundation contact conditions on the seismic performance of concrete gravity dams. From the numerical results obtained, the conclusions can be drawn that the presence of friction contact along the dam–foundation rock interface may: lead to sliding phenomenon at the dam base and to an amplification of the horizontal displacements. Besides, decreasing the principal tensile and compressive stresses in the dam body as well as the relative horizontal displacements.

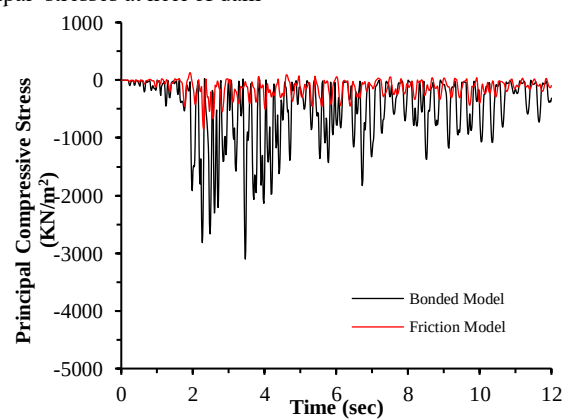
References

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2. Zhong, Zhi-Hua. Finite element procedures for contact-impact problems. Oxford university press, 1993.
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Fig. 7. Time history of principal stresses at heel of dam



a) tensile stresses



b) compressive stresses

Therefore, it is noted that the dam comports much better if it is permitted to slide moderately along its foundation

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9. Chopra, Anil K., and Liping Zhang. "Earthquake-induced base sliding of concrete gravity dams." *Journal of structural Engineering* **117.12** (1991): 3698-3719.
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12. Hariri-Ardebili, M. A. "Impact of foundation nonlinearity on the crack propagation of high concrete dams." *Soil Mechanics and Foundation Engineering* **51.2** (2014): 72-82.
13. Hariri-Ardebili, M. A., and H. Mirzabozorg. "A comparative study of seismic stability of coupled arch dam-foundation-reservoir systems using infinite elements and viscous boundary models." *International Journal of Structural Stability and Dynamics* **13.06** (2013): 1350032.
14. Westergaard, Harold Malcolm. "Water pressures on dams during earthquakes." *Transactions of the American society of Civil Engineers* **98.2** (1933): 418-433.
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16. ANSYS (2018), *Theory user's manual*, Swanson Analysis Systems Inc., Canonsburg, PA, 278 USA.

Program 1st NCST 2022

	27th June 2022			
09h00-09h30	Opening Ceremony Pr BENTATA Samir (Rector of Mascara University) Pr KHENATA Rabeh (Vice-rector in charge of scientific events) Pr DELLA Nouredin (Dean of the Faculty of Science and Technology) Pr. BOUCHEKARA Mohammed (Chair man)			
09h30-10h00	BAKHTI Benoumer Artificial Intelligence based traffic detection system			
10h00-10h30	YAHIAOUI Fatiha VALORESATION ENERGITIQUE DE LA BOUE DE LA STATION D'EPURATION DES EAUX USEES			
10h30-11h10	Room 1	Room 2	Room 3	Room 4
	Coffee Break (I-poster Session 1)	Coffee Break (I-poster Session 2)	Coffee Break (I-poster Session 3)	Coffee Break (I-poster Session 4)
11h10-12h30	2-01 Abdelghani ZABEL Enhanced hybrid Tesla model S energy management system with multiple energy sources using butter worth filters 2-02 Abir BOURANE Contribution A L'étude D'une Solution Pour Handoff Sur Les Réseaux Sans Fil Avec Omnet++ 2-03 Adbelhakim ZEGHOUDI Impact de variation de fréquence du mosfet sur les perturbations électromagnétiques générées 2-04 Adel DJARI The optimal power flow use to improve Voltage stability 2-05 AMARA seif eddine DFT study of the structural, mechanical, electronic, magnetic and magnetocaloric properties of the Co ₂ VGa Heusler alloy 2-07 Boualleg Cheyma Structural, electronic, magnetic and elastic properties of cubic perovskite type oxides NaNiO ₃	2-16 Imene DJEDIDI Optimal Capacitors Allocation Via Moth Flame Optimization 2-22 Marwa GAIDI Design and Control of Quadrotor Based on Neuro-Fuzzy Approach 2-23 MEDKOUR Maissa ENERGY MANAGEMENT IN THE SMARTGRID 2-24 Mohamed REZKI Synthesis of an audio signal from a microphone sensor 2-25 Mohammed AMRI Artificial Neural Network Controller Design for DC-DC Quadratic Boost Converter 2-26 Mokhtar Boudjelal The spin effects on electronic and, optical properties of new ferromagnetic Half-Semiconductor (HSC) in Co-doped CdS: Ab-initio study	2-35 Zohra LAGOUNE First principle investigations of the structural, electronic and optical properties of the cubic Si ₁ -xGexC ternary alloy 2-36 ZOUANEB Chahrazed Theoretical study of phase stability, electronic and magnetic properties of ZrRh ₁ -xCr _x Sb (x = 0, 0.25, 0.50, 0.75 and 1) Heusler alloys by FP-LAPW method 2-37 LAGOUNE Zohra First principle investigations of the structural, electronic and optical properties of the cubic Si ₁ -xGexC ternary alloy 2-38 SIAD Mohammed Benamar Half metallic and ferromagnetic behavior of the full Heusler: Mn ₂ CuSb and Mn ₂ RhSb for spintronic and thermoelectric applications 2-39 MEZAGHRANI ali Feature Selection using Correlation Method for Breast Cancer Classification 2-40 HAZADJI Kheira Contribution a l'étude de l'amorçage des décharges électriques dans les milieux gazeux.	3-08 BELHOUCINE Abderrahim Impact de l'exposition simultanée au vieillissement et chargement mécanique d'une structure endommagée et réparée par patch composite sur la valeur de l'intégral-J 3-11 Habib KHELLAFI Correction and maintenance of polymer pipes under pressure 3-12 Ikhlef Chaouch Mohamed Analyse numérique de l'effet des paramètres géométriques sur la zone de contact sous chargement de fretting fatigue 3-13 KOUIDRI Ikram DETECTION DE L'ENCRASSEMENT DANS UN ECHANGEUR DE CHALEUR DU COMPLEXE CP1/Z 3-14 KOULLI Redouane Nouveau schéma d'intégration temporelle conservatif et dissipatif en analyse dynamique non linéaire des pouters 3D géométriquement exact 3-15 LALLAM Mostefa Fracture Parameters Formulation Of Composite Plate
	Lunch			
	Room 1	Room 2	Room 3	Room 4

13h30-15h00	2-08 Boutouta Fatima Modeling and simulation of three phases Seven and Nine Level NPC grid-tied Photovoltaic Inverter 2-09 BRAKNI Oumaima Influence des différents champs d'écoulement sur la performance d'une pile à combustible PEM 2-10 Chahinez MIMOUNI Study of an electrostatic separator of plastic granular mixtures binary (PVC/ABS) 2-11 CHEKROUN Soufyane A hybrid Intelligent Controller for Wind Energy Generation Systems using Adaptive Neuro-Fuzzy Inference System 2-13 Djazia NASRI Etude des propriétés physiques du composé NdInO₃ 2-14 Faiza CHAHED Nmerical analysis to investigate physical properties of Heusler alloy 2-30 Nawel KERMAS Modeling of I-V characteristics in AlxGa1-xN/GaN HEMTs nanostructures 2-17 Ines RIGHI Commande robuste d'un robot manipulaturer à 2DDL sous contrainte de saturation	2-27 MOUFFOKI Faiza Rapid detection of biomolecules in a dielectric modulated AlGa_N/AlN/GaN MOSHEMT based biosensor 2-28 N. TALEM Etude des propriétés structurales et électroniques de alliages Heusler Fe₂NiSi 2-29 Nacera SERIR STRUCTURAL, ELECTRONIC AND THERMAL PROPERTIES OF Li₆BeZrF₁₂ 2-31 NEKROUF Sadek Real time control of a flight simulator 2-32 Sabria Terkhi High dimensionless merit factor in half-Heusler alloy: Ab-initio study 2-33 Salah Eddine CHOUAIB REFAS 3D analysis of semiconductor atom deposition using the sputtering process 2-34 Yacine DJEGHADER Improvement of Power Quality Using Hybrid Power Filter in three phase system 2-41 Mokhtar Boudjelal Influence of the transition metal on the physical properties of SnS₂ and Sn_{0.75}TM_{0.25}S₂ (TM = Fe, Co): A first-principal study	3-18 N. KADDOURI Impact de la presence de patch de reparation dans la reduction de la concentration des contraintes dans une plaque en Alumnium, effet de la forme d'entaille 3-19 N.E. H SEBAIBI Analyse par la méthode des elements finis du transfert de charge dans le patch composite utilisé pour la réparation d'une structure endommagée 3-20 Naima GHALEM Through neural networks Modeling for Thermal Conductivity of HFO- 1233zd(E) and R-1336mzz(Z)) 3-21 Nor-El-Houda BERRAMDAN L'effet de l'addition de Tungstène sur les propriétés mécaniques et électriques des électrodes de soudage à base de cuivre. 3-23 S. M. MEDJDOUB Analyse numérique de l'effet combiné vieillissement et modification geometrique de l'adhesive et des adherends sur la variation des contraintes dans un joint adhésive ; Assemblage a simple recouvrement type Aluminium / Aluminium 3-24 Sidahmed MEZIANE A Simulation Approach of a Multi-Component Fuel Combustion Using Discrete Phase Model 3-26 Mammeri SABRINA Optimisation of HDPE material orthogonal machining 3-27 Soumia BOUCHAKHCHOUKHA STUDY OF RESIDUAL STRESSES IN POLYETHYLENE PIPE	3-16 Mohamed Amine MEDEBBER Numerical study of natural convection in semi circular porous cavity filled with nanofluid 3-17 Mohmmed Amine KENANDA Elément fini de poutre pour l'analyse non linéaire géométrique des structures poutres en matériaux fonctionnellement gradués type FGM 3-28 Ghania Habbar Analytical Prediction of the Behaviour of Jute/Epoxy Pipes under Internal Pressure 3-29 M.I. Ghermaoui Effet de la modification du bords libres du joint adhésive et des adhérents sur la résistance du joint adhésive 5-01 ABDELKADER Nour Influence des ouvertures dans la maçonnerie sur la vulnérabilité sismique des portiques en béton armé 5-02 BERGHOUTI Hana Etude de la flexion des nano-poutres poreuses FG en utilisant la théorie non-locale 5-03 BOUKHELKHAL Aboubakeur Fresh properties of lightweight self-compacting concrete made with reclyed HDPE plastic as fine aggregate 5-04 DJENAD sonia Modélisation numérique du comportement axiale des colonnes en béton confinées avec intégration partielle des cerces GFRP
15h00-15h35	Coffee Break (I-poster Session 5)	Coffee Break (I-poster Session 6)	Coffee Break (I-poster Session 7)	Coffee Break (I-poster Session 8)
	Room 1	Room 2	Room 3	Room 4
15h35-17h00	2-18 K. Bettir	3-03 A. Houari	3-02 A. BALTACH	5-05 M. KHELIFI

	Calcul ab-intio des propriétés structurales, électroniques, magnétiques et optiques des composés perovskites BaMnO₃ 2-19 Laid KADRI Alimentation continue simple à multi-sortie pour un générateur d'impulsion 2-20 Larouci HEGUIG Model Predictive Direct Power Control for Three-Phase Shunt Active Filter 2-21 Lazrag TAIBAOUI LS-SVM IMPROVEMENT USING GA AND ACO TO DETERMINE FLASHOVER VOLTAGE OF POLLUTED INSULATORS	Etude numérique de l'endommagement d'une structure cylindrique en FGM sous pression interne 3-04 A .BENKHEIRA Réparation des composites stratifiés par patch mou et un patch dure : analyse expérimentale et numérique 3-05 Abdelhakim MAIZIA Comparative study between Glass/Epoxy fiber and Bio-source fibers used in Sandwich plates 3-06 Abdellah BENCHEKKOUR MODELISATION DE PROBLEME DU CONTACT ENTRE DEUX CORPS SOLIDES EN PRESENCE D'UN CHAMP THERMIQUE 3-07 ADJAL yassine Etude numérique des jonctions tubulaires soudées des plateformes offshore soumises à des sollicitations statiques 3-01 A. Baltach Analyse Numerique du Comportement à la Rupture des Joints Colles	Etude numérique de l'effet de la forme du patch sur la durée de vie des structures réparées en composite 3-30 BOUGOFFA Study on the effects of friction and roughness of materials obtained by hot isostatic compression 3-31 K. BERKAS Effets de certains environnements liquid agressifs sur l'énergie d'impact des tuyaux en polyethylene. 3-32 MAALEM Youcef Comparative Heating Performance Analysis of Heat Pump System Using the Expansion Devices (Expansion Valve/Two-phase Ejector): Energy and Economic Investigation 3-34 Laid AMINALLAH Analyse de l'effet des contraintes thermique sur les structures réparées par patch en matériaux composites 3-35 DJIED Abdelhamid Analyse de l'effet des contraintes résiduelles sur les assemblages céramométalliques	Investigating the effects of waste cooking oil and tires on improving the performance of flexible pavements. 5-06 O. Benabdellaziz Influence of modification designs in static mixer using numerical investigations 5-07 Sacia Kirane VALORISATION DU VERRE FEUILLETÉ DANS LE BÉTON AUTO-PLAÇANT: INFLUENCE DE LA SURFACE SPECIFIQUE DE LA POUDRE DE VERRE SUR LE COMPORTEMENT DUBETON 5-08 RAHAL. N Comportement thermique des poutres mixtes acier-béton 5-09 BEGHDAD. H Analyse de l'impact du chargement sur le comportement des plaques en composite fissurées
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	28 th June 2022			
	Room 1	Room 2	Room 3	Room 4
09h00-10h00	1-02 Abdelkader BOUHENNA Étude théorique des propriété d'un matériau thermoélectrique CO₂MnGO 1-04 Allouche Asma Etude ab-initio des propriétés structurales, électroniques et thermoélectriques de l'alliage Full Heusler In₂MnSi : Rendement énergétique 1-05 BELALEM Abdelkader Khalil	1-22 Naceur SELMANE A high efficiency (> 29%) of a new solar cell structure based CIGS and CZTSe absorber layers with MgF₂ anti-reflected coating (ARC) and electrodeposited transparent oxide conducting layers: A numerical simulation 1-23 Ouahiba RAMDANE First Principle Study of the Cubic Diamagnetic Perovskite SrSnO₃ - Structural, Electronic and Optical Properties	4-11 BELBALI Abdelhek Valorisation des coques des graines de Moringapor la préparation d'un biocharbon pour La rétention de l'acide humique. 4-12 BERRAHAL Malika Dye retention by a synthesized inorganic membrane 4-13 BOUAKAZ Boubkeur Seddik ETUDE DES PROPRIETES THERMIQUES ET MECANIQUES DES NANOBIOCOMPOSITES	4-34 Yazid DEROUCHE Coparative study of Phase Diagrams of Propyleneglycol-diacrylate/E7Liquid Crystal Composites 4-35 ZORGANI Mohammed Aymen Synthèse et caractérisation de nanocomposite hybride « CeO₂/PMMA ». 4-36 BOUSSAID Rihab

	Structural and optical properties of pérovskite matériaux for mono-oxyde gas sensor application. 1-06 BOUFOUDI Fatah Etude Des Performances D'une Centrale Solaire A' Capteur Cylindro-Parabolique 1-03 Abdennasser DAHMANI Deep Learning and Machine Learning Technique for Predicting tilted solar radiation	1-24 Rabah MOUSSA Structural, electronic and optical properties of the cubic MoSxTe_{1-x} ternary alloy: A first principle investigation 1-25 Ranida BOURHEFIR Annealing Effect on bromine-Doped Indium Oxide Thin Films Prepared by Ultrasonic Spray Technique 1-26 Readh MOUACHER Designing of noval absorber material for photovoltaic application: $\text{AgGa}_{1-x}\text{Tl}_x\text{S}_2$ alloys	BINAIRES A MATRICE POLYHYDROXYBUTYRATE (PHB) 4-14 BOUMEDIENE Maamar Elimination des ions cuivre contenus dans l'eau par adsorption sur la peau d'amande: Etude cinétique et d'équilibre 4-15 Bousba Dalila Photocatalytic Degradation of Methylene Blue dye under sunlight: Kinetic Study	Etude de l'effet de la granulométrie d'un biochar issu des écorces de grenade pour l'élimination d'un colorant textile 4-38 MOKDAD Hayat Préparation et Adsorption D'un Colorant Anionique par Un Charbon Actif Synthétisé A Base De Coquilles D'amandes.
10h00-10h40	Coffee Break (I-poster Session 1)	Coffee Break (I-poster Session 2)	Coffee Break (I-poster Session 3)	Coffee Break (I-poster Session 4)
	Room 1	Room 2	Room 3	Room 4
10h40-12h00	1-07 BOUGUENNA Abdellah Effect of geometrical parameters on electrical characteristics of AlGaIn/GaN MOS-HEMTs Biosensor 1-08 CHEBBAB Insaf Investigation of the structural, electronic and thermoelectric properties of the compound CsPbI_3 Perovskite by the FP-LAPW method 1-09 CHERIFA KARA Mostafa Khelil Détection et diagnostique de défauts du système photovoltaïque par Réseau de Neurone Probabiliste 1-10 DJELID Khadidja Enhacing thermoelectric properties of CuTiSe_2 by Sodium substitution 1-11 Dounia Ikram SENGRA Simulation and Optimization Of Cadmium Telluride (CdTe) Solar Cell by AMPS-1D 1-12 Esma SEMASSEL Investigation Esma Of Electronic and Magnetic Properties Of $\text{Mg}_{0.75}\text{Ni}_{0.25}\text{S}$ In Rock Salt Phase 1-13 Fatima BENDAHMA Thermoelectric performance of ternary Heusler alloy	1-28 Sayhia BENCHAA Characterization Of Dune Sand For Preparing Metallurgical Grade Silicon 1-29 TAOUTI Mohammed Madani Producing electrical energy by Natural Dyes 1-30 Y. HAMOUDI Performance optimization of lead free $\text{CH}_3\text{NH}_3\text{SnI}_3/\text{CdS}$ heterojunction solar cell with 22.48% efficiency 1-31 Khaled HBALI Investigation of the Electrical Characteristics of InGaIn/GaN Heterostucture HEMTs with HfO_2 and ZrO_2 high-κ as Gate Insulator Material Layers 1-32 BELBAHI sawsen Propriété structural, électronique et optique de la pérovskite MgSnO_3 etude abinitio 1-33 Naceur SELMANE Performance enhancement of $\text{ZnO}/\text{a-Si:H}/\text{n-a-Si:H}/\text{i-Si}/\text{p-BSF}/\text{Al}$ heterojunction solar cells by optimization of some physical parameters: a numerical simulation 1-34 KENANE Abdelbaset Synthesis, characterization and electroactive effect of semi-conductor nanocomposites based on aniline and /Or-o anisidine.	4-16 F. OUADJENIA Removal of Reactif Dye from Wastewater Using Bottom Ash 4-18 Fatima BOUGHERIOU PREPARATION AND CHARACTERIZATION OF ACTIVATED CARBON FROM WALNUT SHELLS "Accepted" 4-19 GOUASMIA Abir Preparation and Performance of highly active CuO/TiO_2 Photocatalyst for Sunlight degradation of Toluidine Bleu (TB) dye 4-20 Houria REZALA Adsorptive removal of textile dye from aqueous solution using pillared montmorillonite : Kinetics, isotherms and thermodynamic studies 4-21 KHERIFI wahida Etude L' Evolution Spatiotemporelle De La Qualité Des Eaux Usées De La Station D'Épuration d'El-Kala (Nord-Est Algérie) 4-22 Lisa KLAAI Evaluation of the properties of Olive Husk flours and Prickly Pear Seed flours and their Poly-lactic acid-based Composites 4-23 MAAZOUZI Assia Valorisation of mussel shells for orange 24 removal	4-40 LILA KERRAI Etude cinétique et mécanique de ciment à base de pouzzolane naturel 4-43 K. EI AKEB Etude expérimentale du potentiel d'adsorption d'un colorant textile sur un charbon actif. Analyse cinétique. 6-01 ATALLAH M'hamed Production et Transport des Matières Solides en Suspension dans le Bassin Versant de l'Oued Mekerra (Nord-Ouest Algerien) 6-02 Benadela laouni ModelisationHydraulique Mono Dimensionnel a l'aide de RAS-Mapper (Application sur le bassin versant de l'ouedEl Hammam) 6-03 Benstaali Imène Etude experimentale du coefficient de frottement dans une conduite circulaire

	Lunch			
	Room 1	Room 2	Room 3	Room 4
13h30-15h30	1-14 H . Bouhani-Benziane Etude théorique des propriétés électronique et magnétique des composés $\text{XMoO}(\text{X}=\text{Cr}, \text{Sc})$ 1-16 Imad Yacine Zentar The influence of the dissociation FeB pairs on the lifetime of Czochralski silicon wafer 1-17 Kamel saidi Up-conversion luminescence properties and temperature sensing performances of $\text{Na}_3\text{GdV}_2\text{O}_8:\text{Yb}^{3+}, \text{Er}^{3+}$ phosphors 1-18 Khadidja bouhadjer Structural, Electronic and Magnetic Properties of the Full-Heusler Co_2MnZ (with $\text{Z}=\text{Ge}, \text{Bi}$) Compounds 1-19 Khaled TOUBAL Détermination structurale des nouveaux matériaux organiques pour les cellules photovoltaïques 1-20 Mekkaoui Fatiha First-principles calculations of electronic and optical properties of $\text{BeSi}_{1-x}\text{C}_x\text{As}_2$ alloys 1-21 Meriem Hamla Etude électrochimique d'un alliage binaire Nickel-Cobalt à partir d'un électrolyte acide 1-27 Salah Eddine BOUSSAADA Etude des Propriétés Optiques, Électriques, Morphologiques et Structurales des couches minces d'oxyde métallique pour Application Photovoltaïques	4-01 S. BOULEFRED Traitement Des Eaux Usées Epurées D'une Station D'épuration Avec Processus De Coagulation Flocculation Et Décantation 4-03 ABDALLAH TOUATI Manel Etude expérimentale du potentiel d'adsorption d'un colorant textile sur un charbon actif. Analyse cinétique. 4-04 ACHOUR Mahdi FRUCTOSE DEHYDRATION REACTION OVER SULPHONATED CARBONS CATALYSTS 4-05 AIT OUMERACI Mohamed Synthèse verte de ZNO-nanoparticule : caractérisation et application comme photocatalyseur 4-06 Asma ITATAHINE Multifunctional Magnetic Chitosan Oligosaccharide grafted Graphene oxide for Camptothecin delivery 4-07 ATBA Wafa Etude comparative de l'élimination d'un colorants textile par adsorption sur noyaux de datte brute et modifié physiquement 4-08 Ayoub AKEF Catalytic depollution of diesel exhaust gases using a gold catalyst supported on mixed cerium-zirconia oxides 4-09 AZRI Naima Applicability of a Low-cost and Highly Effective Biochar Derived from <i>Elaeagnus Angustifolia</i> Seeds for Antibiotic Adsorption in Aqueous Media 4-10 BEKHTI nabila Valorisation Des Molécules Bioactives Dans L'Huile Essentielle Extraite d'une Plante De La Flore Algérienne « <i>Ammoides Verticillata</i>.	4-24 MERIR Roufaïda L'application des minéraux argileux pour la conception des systèmes médicamenteuses pour une libération modifier. 4-25 MESBAH Abdelhak La rétention d'un herbicide "glyphosate" en solution aqueuse par une argile modifier Algerian 4-26 MESSEKINE Souad Etude de la réaction d'estérification d'une résine alkyde 4-27 Mokhtar.SAIDI Application of adsorption process for effective removal of contaminants from water 4-29 O. MEZIANE Thermal stability of PC/PET blends prepared with and without transesterification catalyst 4-30 Rabah BOUDISSA Synthèse et caractérisation de nouveau thiazolidinones dérivés d'isatin 4-31 SEDDIKI Asmaa EDTA chelate assisted phytoextraction of heavy metal from soil 4-32 Tabak Messekine Djamila Transformation du collagène type 1 à un biomatériau antimicrobien 4-33 TALEB Souhila Isotherme d'adsorption d'un colorant alimentaire (jaune orange) par un matériau adsorbant issu des déchets d'arganier	6-04 Chahira SAYAD Estimation de la conductivité hydraulique par l'utilisation de la méthode des profils instantanés – Application dans le domaine de la géotechnique environnementale 6-05 Hemza BOUMEZBEUR Modélisation de la Dose de Coagulant dans les Stations de Traitement des Eaux Potables par le Modèle d'Apprentissage Machine le Gaussian Process Régression (GPR): Une Etude Comparative. 6-06 Imane KHEDEM Quantification des fuites dans la rive droite du barrage El Chorfa 6-07 Lamia BENHALIMA Evaluation de l'effet des métaux lourds sur des bactéries aquatiques 6-08 Laouni GAIDI Utilisation De La Méthode TDR Dans La Gestion Des Eaux D'irrigation 6-10 SOUSSI Ismehen LA VARIATION CLIMATIQUE MENSUELLE DU BASSIN VERSANT TAFNA 6-11 Zoulikha BOUKOUBA Defis et mesures prises pour faire face aux ressources en eaux en algérie
15h30-16h00	(I-poster Session 5)	(I-poster Session 6)	(I-poster Session 7)	(I-poster Session 8)
16h00-16h20	Closing Ceremony			

27 th June 2022			
(I-poster Session 1)	(I-poster Session 2)	(I-poster Session 3)	(I-poster Session 4)
P2-01 ABROUCHE Amel P2-02 Amrani Zoubida P2-03 Azil kenza P2-04 Benreguia Khadidja P2-05 BERKAT Zeyneb P2-06 BOUARARA Hadjer P2-07 CHEKROUN Soufyane P2-08 Chibani Hosayn P2-09 Dahmani Kaouthar P2-10 Debab Mohamed	P2-19 SENOUCI Meriem P2-20 BOUARGOUB Ali P2-21 Hadri Abdellatif P3-01 A. ABOUB P3-02 A. Bourada P3-03 Abdesamed Benbedra P3-04 Adel DELIOU P3-05 Ait Taleb Belkacem P3-06 AMINALLAH Salma P3-07 Belkacem Mokhtar	P3-17 Karima BOUDJEDA P3-18 Karima SELLAMI P3-21 KRIBA Abdelmalek P3-23 Nawal Guerroudj P3-24 Nessab Walid P3-25 Oussama DJEMA P3-26 Ramdoun Sara P3-27 Rania BOUDEBANE P3-28 Saadia Attou P3-29 Saadia Attou	P3-39 Djied Abdelhamid P5-01 Hadri Soumaya P5-02 A. Remil P5-03 Agha noureddine P5-05 AMARA Rezki P5-07 Boulahya ibtissam P5-08 Boussaa Nadia P5-09 CHELAHI CHIKR Sara P5-11 Guerbas Nabil P5-13 I. HAMMAR
(I-poster Session 5)	(I-poster Session 6)	(I-poster Session 7)	(I-poster Session 8)
P2-11 GAIDI Marwa P2-12 GUERRAICHE Khaled P2-13 Kerbiche Hind P2-14 LAOUFI Abdelhaq P2-15 LAZREG Mohamed Haithem P2-16 MEKHTICHE Manel P2-17 MEKSI Aissa P2-18 Sedjel Fatima	P3-08 Berarma khadidja P3-09 BOUCEKINE Ikram P3-10 Brahim Menacer P3-11 DjihadCharmati P3-12 Farouk Yahia ADDOU P3-13 Fatima Zohra Benouis P3-14 Ghania Habbar P3-16 I. HADJ SAID	P3-30 Sabrina TAIEB BOUDERBAL P3-31 Toufik Bensana P3-32 TOUHAMI Rim Chaima P3-33 Zerrouki Otmene P3-34 Bachi bensaad saoussane P3-35 ADAM HAJAZI P3-37 kheoula barekase P3-38 Laid Aminallah	P5-14 Khelaifa Hamad P5-15 Medjmadj Sara P5-16 Metrouni Tarek P5-17 Sifeddine Abderrahmani P5-18 Y. Rezk allah P5-19 Zahira SADOON

28 th June 2022			
(I-poster Session 1)	(I-poster Session 2)	(I-poster Session 3)	(I-poster Session 4)
P1-01 Abbaci Amina P1-02 Assia Tounsi P1-03 Bekrentchir Khalida P1-04 Beloufa nabil P1-05 Bendjilali Hajer P1-07 Chaimaa Messelmi P1-08 Choulia Latifa Halloui P1-09 Gherici Remil	P1-19 Mohammed ElSaid SARHANI P1-21 Oumria Kourat P1-22 Sabrina Roguai P1-23 Taibi Ilies P1-24 Warda. MEKHAZANIA P1-25 Y. Bouchentouf Idriss P1-27 ZEFFANE Soumia P1-28 Zerrouki Otmene	P4-01 MERRAD Amel P4-02 BENAÏSSA Houssine P403 Benamraoui Faouzia P4-04 BOUAZIZ Chaima P4-06 Bouzekri Hanane P4-07 Chahmi Gheidene Abdel Kader P4-09 Hana Djellab	P4-23 SEHTAL Sabah P4-24 SEMGHOUNI Hassina P4-26 Wahiba YOUSFI P4-27 Fatine Ali Messiad P4-28 BENMILOUD Mohammed Zakaria P4-30 Elhachemi Kenza P4-32 M. Djebbar

P1-10	Hind KADDARI	P1-29	Zineb Ibtissem GOUCHIDA	P4-10	HAZMOUNE Hichem	P6-01	Abd Errahmane ZEMOURI
P1-11	HOGGAS Saida	P1-30	ZORGANI Roquiya Nour El Houda	P4-11	HOGGAS Saida	P6-02	AIT OUAKLI Nabila
				P4-13	LAIDI Ahmed	P6-03	ARBAOUI Assia
(I-poster Session 5)		(I-poster Session 6)		(I-poster Session 7)		(I-poster Session 8)	
P1-12	Kadda Argoub	P1-33	Larbi Rekia	P4-15	Mohamed Amine DJILALI	P6-04	BALOUL Djouhra
P1-13	KHALDI ahmed	P1-34	besbes anissa	P4-16	Moufida MERZOUGUI	P6-05	Cheikh BERGANE
P1-14	Lachekhab Fadhila	P1-35	Kawther Fatima Zohra Ezzine	P4-17	Moulessehoul Atika	P6-07	Hadj Djelloul
P1-15	M. Matougui	P1-36	GASMI Meriem	P4-18	O. Meziane	Mohammed	
P1-16	M.A.Kadaoui	P1-38	sofrani fatima	P4-19	S.Telli	P6-08	Kablouti Mehdi
P1-17	Mallik Lynda	P1-39	Faten belarbi	P4-21	Samira hamza reguig	P6-09	Mokhtar Messaad
P1-18	Mohamed BOUKHELEF	P1-40	Kenane abdelbaset	P4-22	Samira.Tebani	P6-10	MOUSSOUNI Abderzak