People's Democratic Republic of Algeria

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Faculty of Technology

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CNMM2023/ T01-2023015

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ASSAS Taqiyeddine

LAHE Laboratory, Biskra University, Biskra, Algeria

Has successfully participated at the

1ST National Conference on Mechanics and Materials NCMM'2023

06 - 07 December 2023, Boumerdes University- Algeria

By presenting, a communication entitled:

A NOVEL C0 STRAİN BASED FİNİTE ELEMENT FOR STATİC ANALYSES OF FUNCTİONALLY GRADED PLATES

Co-authors: Messaoud Bourezane , Madjda Chenafi , Seyfeddine Benabid

Signature

M'hamed Bougara Boumerdes University * Faculty of Technology * NCMM' 2023 National Conference on Material and Mechanic 06-07 December 2023

Prof. LECHEB Samir
President of Organizing Committee

M'Hamed Bougara University of Boumerdes
Faculty of Technology
Mechanical Engineering Department

National Conference on Mechanics and Materials
NCMM'2023

6-7 Dec 2023. Boumerdes, Algeria

PROGRAM

Day 01	Wednesday, December 06, 2023
09 :00- 09 :30	**Reception** - (Campus oust Library – Faculty of Technology - University of Boumerdes)
09 :30- 09 :45	**Opening - Pr. Mustapha YAHI (Rector of University), Pr. M. SAIDI (Dean of Faculty),** Pr. A. CHELLIL (Chairmen of NCMM), Dr. MECHAKRA (Co-Chair of Organization Committee)
09:45 – 10 :15	**Plenary I** - '*Artificial intelligence (AI), STARTUP, invention, Entrepreneurship*, ecosystem **Pr. S.Lecheb, A.Daoui, Y.Guerbai, D.Benayad, A.Meziane, INCUBATOR-CATI-CDE-BLEU-AI, UMBB**
10:15 – 10 :30	**Plenary II** - '*Hydrogen and GREEN ENERGY* - **Pr. Kamel MOHAMMEDI - Univ. Boumerdes**
10:30 - 11:00	**Coffee break - Poster Session I**
11:00 - 13:00	**Oral session I**
13:00- 14:00	**Lunch**
14:00- 16:00	**Oral session II**
16:00- 16:30	**Coffee break - Poster Session II**
16:30- 18:00	**Oral session III**

09:30- 16:00 Online session first day December 6, 2023

Day 02	Thursday, December 07, 2023
09:30- 10:00	**Plenary III - Pr. Leila ALIOUANE** *'ARTIFICIAL INTELLIGENCE IN EARTH SCIENCES FOR POROSITY PREDICTION IN PETROLEUM RESERVOIR FROM GEOPHYSICAL WELL-LOGS DATA. APPLICATION TO ALGERIAN SAHARA''* **Univ. Boumerdes**
10:00 - 10:30	**Oral session IV**
10:30 - 11:00	**Startup Pitch**
11:00 - 11:30	**Coffee break - Poster Session III**
11:30- 12:00	**Closing Pr. M. SAIDI (Dean of Faculty),** Dr. A. DAOUI, Pr. B.SAFI, Pr. S. LECHEB

12:00- 15:00 Social program Visit to The Great Mosque of Algiers, Djamaâ El-Djazaïr, زيارة جامع الجزائر

	Day 1 : December 06, 2023
11:00 - 13:00	Oral Session I On-site (Room- Conference)
TOPICS	All Topics

Chairman: .....

N° :	Ref. ID	Author	TITLE	City
1.	T01-2023006	DEHIMI Nour El Houda	LABORATORY OF PHYSICS OF EXPERIMENTAL TECHNIQUES AND ITS APPLICATIONS, UNIVERSITY OF MEDEA, ALGERIA.	Alger
2.	T01-2023031	Benalia KOUINI	EFFECT OF TREATED NANOCLAYS ON THE MECHANICAL PROPERTIES OF POLYPROPYLENE/POLYAMIDE66 NANOCOMOPOSITES	Boumerdes
3.	T02-2023045	Allal BEDLAOUI	OPTIMIZATION OF CONTACT SURFACES IN SHRINK-FIT ASSEMBLIES OF THIN-WALLED CYLINDERS	Adrar
4.	T06-2023062	Oubbati FADIA	PROBING CFRP FIBER ORIENTATION WITH EDDY CURRENTS: A NON-DESTRUCTIVE APPROACH	Laghouat
5.	T06-2023064	khalil BENABDERAZAG	NON-DESTRUCTIVE CHARACTERIZATION OF ALFA/PLA BIO-COMPOSITE USING IMPULSE EXCITATION TECHNIQUE (IET)	Ouargla
6.	T07-2023068	Amina NOUAL	NUMERICAL STUDY OF THE ELECTRICAL CHARACTERISTICS OF A NEW ALGAN/GAN MOSHEMT DESIGN ON 4H-SIC SUBSTRATE WITH QUATERNARY ALINGAN SPACER LAYER	Boumerdes
7.	T07-2023074	Zahira MOUAS	FREE VIBRATION ANALYSIS OF LAMINATED COMPOSITE PLATES REINFORCED WITH CARBON FIBERS IN THERMAL ENVIRONMENTS	Blida
8.	T07-2023080	AMIRA DJELLAB	EXPERIMENTAL STUDY OF MECHANICAL BEHAVIOR IN SHEAR AND BENDING TEST OF SANDWICH PANELS	Alger
9.	T01-2023211	ABDELLI abdelbasset	FIRST PRINCIPLE STUDY OF STRUCTURAL, ELECTRONIC AND MAGNETIC PROPERTIES OF QUATERNARY HEUSLER ALLOYS BASED ON LITHIUM (LIX'YZ) WITH 18 VALENCE ELECTRONS.	Ain Temouchent
10.	T07-2023219	MADANI kouider	ANALYSIS OF DAMAGE TO A 2024-T3 ALUMINUM STRUCTURE IN THE PRESENCE OF A V NOTCH REPAIRED BY COMPOSITE PATCH USING XFEM-CZM / XFEM-VCCT TECHNIQUES	Sidi Bel-Abbes

	Day 1 : December 06, 2023
11:00 – 13 :00	Oral Session I Online (Salle –INFO)
TOPICS	All Topics

Chairman: .....

N° :	Ref. ID	Author	TITLE	City
1.	T01-2023002	DEBABECHE Nedjla	VALORIZATION OF WASTE PALM FIBER AND USE AS REINFORCEMENT IN BIOCOMPOSITE MATERIALS	Biskra
2.	T01-2023011	HEBBAZ Abdennour	HETEROGENOUS FENTON-LIKE DEGRADATION OF METHYLENE BLUE IN PRESENCE OF MAGNESIUM FERRITE NANOPARTICLES	Annaba
3.	T13-2023134	Rachid RABEHI	EFFECT OF RECYCLED GRAVEL ON THE DURABILITY OF SELF-COMPACTING CONCRETE WITH DOUBLE-HOOK STEEL FIBER	Djelfa
4.	T11-2023115	Abderrahmane LAKIKZA	A COMPREHENSIVE STUDY ON WIND TURBINE FAULTS AND DIAGNOSIS METHODS	Skikda
5.	T01-2023015	ASSAS Taqiyeddine	A NOVEL C0 STRAİN BASED FİNİTE ELEMENT FOR STATİC ANALYSES OF FUNCTİONALLY GRADED PLATES	Biskra
6.	T01-2023020	Hadjer MEZIANI	THE STRUCTURAL AND ELECTRONIC PROPERTIES OF BROOKITE TiO2: A FIRST–PRINCIPLES STUDY first-principles study	Medea
7.	T01-2023023	Sarra BOURIACHI	FIRST-PRINCIPLES STUDY OF STRUCTURAL, OPTICAL, ELECTRONIC PROPERTIES AND H2 ADSORPTION OF THE ZnRh2O4 NORMAL SPINEL OXIDE	Alger
8.	T01-2023025	Faouzi HAMZA	NUMERICAL OPTIMIZATION OF THE DEEP DRAWING OPERATION OF DC04 STEEL SHEET	Tébessa
9.	T01-2023029	Tarek KHATIR	MODILISATION OF ELECTRON-MATTER INTERACTION: SHORTRANGE POTENTIAL EFFECT IN THE INITIAL STATE	Setif
10.	T01-2023030	Amira GHARBI	EFFECT OF TEMPERATURE ON THE ELABORATION OF NICKEL COATINGS ON COPPER	Souk Ahras
11.	T01-2023033	Chaouki SIOUANI	MODELING THE PROPERTIES OF ZERO-DIMENSIONAL ARSENIC NANOMATERIALS DOPED WITH ONE TRANSITION METAL ATOM	Alger
12.	T01-2023037	Maissa Bouselsal	THE EFFECT OF HYBRID NANO-FLUID ⟩Al⟨_2 O_3-CNT/Water IN A HEAT EXCHANGER RECTANGULAR-SHAPED TUBE	Skikda
13.	T01-2023039	Maissa Bouselsal	PERFORMANCE EVALUATION OF TUBE / SHELL HEAT EXCHANGERS USING ZNO-MWCNT/WATER HYBRID NANO FLUID	Skikda
14.	T01-2023152	FODLILI Benslim	ELABORATION AND STRUCTURAL CHARACTERIZATION OF La(Fe/Co)MnO3 MANGANITE PEROVSKITE FOR MAGNETOCALORIC APPLICATION	Djelfa
15.	T02-2023041	Sabrina HAOUES	MULTI-OBJECTIVE OPTIMISATION OF TURNING PROCESS PARAMETERS USING MAIRCA METHOD	Guelma
16.	T02-2023042	Salah Hadjela	OPTIMIZING CUTTING PARAMETERS WHEN MACHINING AISI 4140	Guelma
17.	T02-2023046	Khaoula ABBED	CUTTING PERFORMANCE AND WEAR MORPHOLOGY OF TIN AND TIALN COATED CARBIDE AND UNCOATED CARBIDE TOOLS DURING DRY TURNING OF TI–6AL–4V	khenchela
18.	T03-2023048	EULDJI Riadh	VIBRATION BASED CONDITION MONITORING APPROACH USING THE NONLINEAR AUTOREGRESSIVE MODEL WITH EXOGENOUS INPUT AND THE DECISION TREE ALGORITHM.	Medea

The National Conference on Mechanics and Materials (NCMM'2023) will be held in Faculty of Technology / Boumerdes University, Algeria during December 06-07, 2023. The main goal of which is to strengthen communication between the higher education family and industrialists, bring the socio-economic sector closer to academic skills and public administration. Our goal is to establish a national ecosystem favourable to investment, through communication between the sectors concerned. Also, through this conference, we wish to draw a roadmap that pushes the economy and national development towards progress.

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2nd National Conference on Mechanics and Materials

Boumerdes 2023

2nd National Conference on Mechanics and Materials (CNMM2023)

Boumerdes- Algeria, December 06&07, 2023

Editors

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S. LECHEB
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SECOND NATIONAL CONFERENCE ON MECHANICS AND MATERIALS

2ndNCMM2023

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Editors:

Ahmed CHELLIL
Samir LECHEB
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Le secrétariat du Conference :
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The second National Conference on Mechanic and Material (NCMM'2023) will be held in Faculty of Technology / Boumerdes University, Algeria during November 15-16, 2023. The main goal of which is to strengthen communication between the higher education family and industrialists, bring the socio-economic sector closer to academic skills and public administration. Our goal is to establish a national ecosystem favorable to investment, through communication between the sectors concerned. In addition, through this conference, we wish to draw a roadmap that pushes the economy and national development towards progress.

To this end, this conference focuses on topic below:

Topic 01: Materials Science

Topic 02: Mechanical Construction and Manufacturing

Topic 03: Maintenance

Topic 04: Vibration and dynamic

Topic 05: Fracture Mechanics and Fatigue and Damage

Topic 06: Non Destructive Testing and detection

Topic 07: Composite Materials

Topic 08: Tribology

Topic 09: Mechatronics and Electromechanical

Topic 10: Industrial Engineering

Topic 11: Energetic and Renewable Energy

Topic 12: Innovation and Startup

Topic 13: Green hydrogen and recycling

Topic 14: Civil engineering

Topic 15: Intelligence Artificial and Robotic

Topic 16: Process Engineering

Ahmed CHELLIL
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KeynoteSpeakers

Plenary I- Prof. Samir LECHEB, Dircetor of Incubator, UniversityM'hamed Bougara Boumerdes, Algeria ; *''Support of startups and spinoffs to obtain label by university incubators for develop innovation in Algeria''*

As part of ministerial decree 1275 for the support of end-of-cycle students: third year bachelor's degree, second year master's degree and doctoral student, innovative project leaders, to create startups and spinoffs, through workshops and training at the level university incubators and accelerators, in collaboration with research centers and the socio-economic sector. In order to develop innovation and encourage as many young people as possible to enter the field of business in Algeria.

Keys Words: Startup, Spinoff, Innovation, Incubator, University

Plenary II- Prof. Kamel Mohammedi,University M'hamed Bougara Boumerdes, Algeria ;'' *Green Hydrogen and Long Term Energy Strategies''*

Plenary III- Prof. Leila ALIOUANE, UniversityM'hamed Bougara Boumerdes, Algeria;''*artificial intelligence in earth sciences for porosity prediction in petroleum reservoir from geophysical well-logs data'',*

Artificial Intelligence techniques are becoming very popular in earth sciences, in the last decade, mainly in petroleum exploration and exploitation. Reservoir characterization by geophysical well-logs data analysis is commonly conducted and plays a central role in formation evaluation in petroleum domain. The most petrophysical parameters that describe the reservoir are the porosity, the permeability and the water saturation where the porosity is the main key. Using conventional methods, the estimation of the porosity is very difficult, mainly in shaly reservoirs where the presence of clay affects considerably, the porosity and the permeability. For that, we propose to accurately predict the porosity from geophysical recordings crossed the formation of wells using machine-learning methods such as multilayer neural network. The input layer are constituted by the petrophysical well-logs data and the output layer presented by one neuron corresponding to the porosity predicted.

Topics

SUMMARY

A NOVEL C0 STRAİN BASED FİNİTE ELEMENT FOR STATİC ANALYSES OF FUNCTİONALLY GRADED PLATES

Taqiyeddine Assas1*, Messaoud Bourezane 2, Madjda Chenafi 3, Seyfeddine Benabid 4

1,2,3 LAHE Laboratory, Faculty of Science and Technology, Biskra University, Biskra, Algeria
4 LARHYSS Laboratory, Faculty of Science and Technology, Biskra University, Biskra, Algeria

Abstract

The static bending of functionally graded material (FGM) plates is examined by altering the volume proportion of the ceramic and metallic elements using a simple power law distribution. The deflection and stresses are estimated numerically using a four-node quadrilateral finite element called QSBP20 (Quadrilateral Strain-Based Plate with 20 degrees of freedom) created by Belounar et al. This element is created by superimposing two strain-based elements, the first being a membrane based on the strain approach with two (U, V) degrees of freedom per node and the second being a Reissner-Mindlin plate based on the FSDT with three (w, θ_x, θ_y) degrees of freedom per node at each of the four corner nodes. To simplify the issue and prevent membrane-bending coupling, the idea of the neutral surface position is developed. The current model's comparison with existing literature is full and determined to be logical. For the current task, in-house MATLAB code has been built. The parametric research is being conducted to investigate the influence of the side-to-thickness ratio, aspect ratio, thickness, and volume fraction index on stresses and transverse displacements

Keywords:*Strain based • Static Bending • FGM plate• Finite element . Reissner-Mindlin plate.*

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