The First National Conference Of Materials Sciences And Renewable Energy CMSRE23

November 22-23,2023

Ministry of Higher Education and Scientific Research
RELIZANE University
Faculty of Sciences and Technology
Department of Physics

الملتقى الوطني الأول
لعلوم المادة والطاقة المتجددة
22-23 نوفمبر 2023

CERTIFICATE OF PARTICIPATE

Assas Taqiyeddine

has participated in The First National Conference Of Materials Sciences And Renewable Energy CMSRE23 on November 22-23, 2023 in Relizane, Algeria

PAPER TITLE

Buckling analysis of functionally graded material plates using the strain approach and first-order shear deformation theory elements

PRESENTATION TYPE

Oral

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Dean Of Faculty

د . جيلالي بعداد
عميد كلية العلوم والتكنولوجيا

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Dr. ARRAR AMINA

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RELIZANE University

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Department of Physics

In collaboration with the Faculty of Sciences & Technologies jointly with the Research project (PRFU)

PRFU: Experimental study and simulation of heusler / perovskite heterojunctions for renewable energy applications

Code : B00L02UN480120220002

Organize

The First National Conference Of Materials Sciences And Renewable Energy

On November, 22th. 23th ,2023

Relizane, Algeria

Book Of Abstracts

INTRODUCTION

It was truly a great pleasure for us to greet a lot of attending participants from different states.

We firmly believe that the conference will become an important national event in the field of Physics, discussing different application in theorical and experimental physics.

The organizations supported two days of conference. There were 200 papers accepted for the presentation at MCSRE 2023, from different Algerian states. We had plenary speech at plenary session.

The purpose of MCSRE 2023 was to provide a forum for the participants to report and review innovative ideas, with up-to-date progress and developments, and discuss novel approaches to the application in the field of their own research areas and discuss challenges of doing science.

We sincerely hope that the exchange of ideas on doing research, will

help the participants share and enhance their common interest in science.

On behalf of the Organization Committee of MCSRE 2023, we would like to heartily thank our university and physics department for all the work put in the conference. We would also like to thank the authors for their contribution to MCSRE 2023; the participants and friends of MCSRE 2023, for their interest and efforts in helping us make the conference possible; and the Editorial boards for their effective work and valuable advice, especially the MCSRE 2023 staff, for their tireless efforts and outstanding services.

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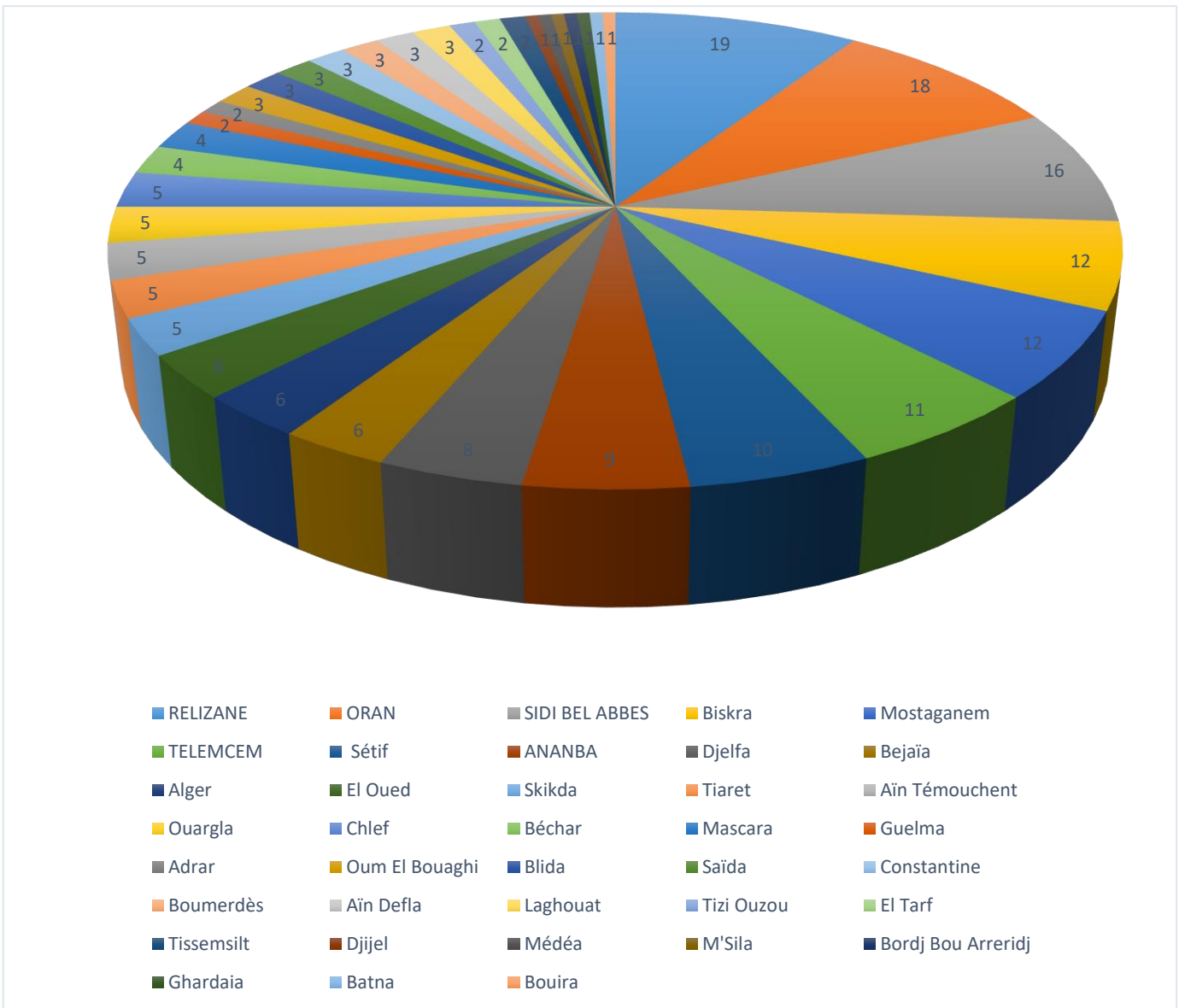
CONFERENCE STATISTICS

Distribution of the papers presented orally at the conference by states

states of Algeria	Number of paper	Percentage
RELIZANE	19	9,31%
ORAN	18	8,82%
SIDI BEL ABBES	16	7,84%
Biskra	12	5,88%
Mostaganem	12	5,88%
TELEMCEM	11	5,39%
Sétif	10	4,900%
ANANBA	9	4,41%
Djelfa	8	3,92 %
Bejaïa	6	2,94%
Alger	6	2,94%
El Oued	6	2,94%
Skikda	5	2,45%
Tiaret	5	2,45%
Aïn Témouchent	5	2,45%
Ouargla	5	2,45%
Chlef	5	2,45%
Béchar	4	1,96%
Mascara	4	1,96%
Guelma	2	0,98%
Adrar	2	0,98%
Oum El Bouaghi	3	1,47%
Blida	3	1,47%
Saïda	3	1,47%
Constantine	3	1,47%
Boumerdès	3	1,47%
Aïn Defla	3	1,47%
Laghouat	3	1,47%
Tizi Ouzou	2	0,98%
El Tarf	2	0,98%
Tissemsilt	2	0,98%
Djijel	1	0,49%
Médéa	1	0,49%
M'Sila	1	0,49%
Bordj Bou Arreridj	1	0,49%
Ghardaia	1	0,49%
Batna	1	0,49%
Bouira	1	0,49 %
Total	204	100%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Djijel
Médéa
M'Sila
Bordj Bou Arreridj
Ghardaia
Batna
Bouira

TOPIC 1

Organic inorganic perovskites solar cells

Buckling analysis of functionally graded material plates using the strain approach and first-order shear deformation theory elements.

Assas Taqiyeddine [1*], ***Bourezane Messaoud*** [2], ***Chenafi Madjda*** [3], ***Seyfeddine Benabid*** [4]

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Abstract – This present paper deals with the buckling analysis of of functionally graded (FG) material subjected to uniaxial and biaxial in-plane forces using a four-node finite element based on the strain approach and the first-order shear deformation theory . The material properties of the plate are assumed to be graded continuously in the direction of thickness. The variation of the material properties follows a simple power-law distribution in terms of the volume fractions of constituents. The developed element has only five degrees of freedom per node (U,V,W, β_x , β_y).Comparison tests are carried out to validate the current results, and it can be stated that the suggested element is accurate and efficient in predicting the buckling behavior of functionally graded plates. The critical buckling load of FGM is also researched and analyzed in terms of side-to-thickness ratio, aspect ratio, volume fraction exponent, and loading conditions.

Keywords – Strain approach · Mechanical buckling · Functionally graded · Finite element