

1st Portuguese Condensed Matter Physics National Conference (CMPNC 2019)

EPJ Web of Conferences Volume 233 (2020)

Porto, Portugal
8 - 10 May 2019

Editors:

**Bernardo Goncalves Almeida
J. Agostinho Moreira**

ISBN: 978-1-7138-1016-2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 4.0 International License. License details:
<http://creativecommons.org/licenses/by/4.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2021)

For additional information, please contact EDP Sciences – Web of Conferences at the address below.

EDP Sciences – Web of Conferences
17, Avenue du Hoggar
Parc d'Activité de Courtabœuf
BP 112
F-91944 Les Ulis Cedex A
France

Phone: +33 (0) 1 69 18 75 75

Fax: +33 (0) 1 69 28 84 91

contact-edps@webofconferences.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

QUANTUM EFFECTS IN ELECTRICAL TRANSPORT PROPERTIES OF BISMUTH CHALCOGENIDES TOPOLOGICAL INSULATORS	1
<i>Paixão José A., Henriques Marta S. C., Micale Carlotta, Lopes Elsa B., Pereira Vanda M., Gonçalves António P.</i>	
MAGNETIC STUDIES OF MONOCLINIC $\text{Cu}_4\text{O}(\text{SeO}_3)_3$, A COPPER-OXO-SELENITE DERIVATIVE	6
<i>Malta José F., Henriques Marta S. C., Paixão José A., Gonçalves António P.</i>	
LATTICE-BOLTZMANN SIMULATION OF FREE NEMATIC-ISOTROPIC INTERFACES	11
<i>Coelho Rodrigo C. V., Araújo Nuno A. M., Telo Da Gama Margarida M.</i>	
THEORETICAL CALCULATIONS OF NONLINEAR OPTICAL CALCULATIONS OF 2D MATERIALS	17
<i>Ventura G. B., Passos D. J., Viana Parente Lopes J. M., Lopes Dos Santos J. M. B.</i>	
NON-LINEAR OPTICAL RESPONSE IN DISORDERED 2D MATERIALS	21
<i>João Simão M., Viana Parente Lopes João M.</i>	
MULTI-ORBITAL PHYSICS OF EDGE-MAGNETISM IN A HUBBARD MODEL OF TRANSITION-METAL DICHALCOGENIDE NANORIBBONS: COMPARING MEAN FIELD THEORY AND DETERMINANT QUANTUM MONTE CARLO	27
<i>Brito Francisco, Castro Eduardo V., Lopes João M. V. P.</i>	
ELECTRONIC PROPERTIES OF TWISTED BILAYER GRAPHENE IN THE PRESENCE OF A MAGNETIC FIELD	33
<i>Martins Quintela M. F. C., Guerra J. C. C., João S. M.</i>	
ENERGY LOSS BY FAST-TRAVELLING CHARGED PARTICLES TRAVERSING TWO-DIMENSIONAL MATERIALS	38
<i>Santos Jaime E., Vasilevskiy Mikhail, Peres Nuno M. R., Jauho Antti-Pekka</i>	
TERAHERTZ FREQUENCY COMB IN GRAPHENE FIELD-EFFECT TRANSISTORS	44
<i>Cosme Pedro</i>	
MODELLING ISOLATED HYDROGEN IMPURITY IN Lu_2O_3 WITH MUONIUM SPECTROSCOPY	49
<i>Vilão Rui C., Vieira Ricardo B. L., Alberto Helena V., Gil João M., Weidinger Alois, Lichti Roger L., Mengyan Patrick W., Baker Britany B., Lord James S.</i>	
INVESTIGATING THE ANISOTROPIC COMPRESSION AND HIGH-PRESSURE PHASE SYMMETRY OF ORTHORHOMBIC RFeO_3 VS RMnO_3	54
<i>Vilarinho R., Almeida A., Agostinho Moreira J.</i>	
ELECTRICAL RESPONSE OF $\text{La}_{2/3-x}\text{Li}_x\text{TlO}_3$ CERAMICS OBTAINED BY SPARK PLASMA SINTERING	60
<i>Silva-Pereira J., Guerrero F., Romaguera-Barcelay Y., Aguilera L., Silva R. S., Anglada- Rivera J., Pillajo N. C., Almeida A., Agostinho Moreira J., Leyet Y.</i>	
ION BEAM INDUCED CURRENT ANALYSIS IN GAN MICROWIRES	68
<i>Verheij Dirkjan, Peres Marco, Cardoso Susana, Alves Luís Cerqueira, Alves Eduardo, Durand Cristophe, Eymery Joël, Fernandes Jorge, Lorenz Katharina</i>	
MICROMAGNETIC STUDY OF THE VORTEX STATE IN SUB-MICRON IRON DISCS	74
<i>Peixoto Ludgero, Sousa C., Navas D., Araújo J. P.</i>	
MAGNETOSTRICTION IN AMORPHOUS $\text{Co}_{66}\text{Fe}_{34}$ MICROCANTILEVERS FABRICATED WITH HYDROGENATED AMORPHOUS SILICON	80
<i>Silveira B. M., Belo J. H., Pinto R., Silva J. A., Ferreira T. D., Pires A. L., Chu V., Conde J. P., Frazão O., Pereira A. M.</i>	
CDS VERSUS ZNSNO BUFFER LAYERS FOR A CIGS SOLAR CELL: A DEPTH-RESOLVED ANALYSIS USING THE MUON PROBE	87
<i>Ribeiro Eduardo, Alberto Helena V., Vilão Rui C., Gil João M., Weidinger Alois, Salomé Pedro M. P., Prokscha Thomas, Suter Andreas, Salman Zaher</i>	
ORTHORHOMBIC GdMnO_3 EPITAXIAL THIN FILM GROWN ONTO SrTiO_3 (110)	92
<i>Machado P., Figueiras F. G., Vilarinho R., Fernandes J. R. A., Tavares P. B., Rosário Soares M., Cardoso S., Almeida A., Agostinho Moreira J.</i>	
DEPOSITION OF LU-FE-O THIN FILMS ON SILICA GLASS SUBSTRATES BY MOCVD	98
<i>Cardoso A. F., Bassou A. A., Amaral V. S., Fernandes J. R., Tavares P. B.</i>	

LOW TEMPERATURE CHARACTERIZATION OF HIGH EFFICIENCY SPIN-FILTER JOSEPHSON JUNCTIONS	104
<i>Caruso Roberta, Giovanna Ahmad Halima, Pal Avradeep, Piero Pepe Giovanni, Massarotti Davide, Blamire Mark G., Tafuri Francesco</i>	
SIMULATION OF THE TEMPERATURE PROFILE OF BACAZRTIO₃ THIN FILMS DURING LASER ANNEALING	110
<i>Rebelo Tiago, Alves João, Almeida Bernardo</i>	
ON THE SINGLE WALL CARBON NANOTUBE SURFACE PLASMON STABILITY	116
<i>Silva Jaime, Milne Bruce F., Nogueira Fernando</i>	
NUMERICAL SIMULATION OF NON-EQUILIBRIUM STATIONARY CURRENTS THROUGH NANO-SCALE ONE-DIMENSIONAL CHAINS	122
<i>Dos Santos Pires João Pedro, Amorim Bruno, Viana Parente Lopes João Manuel</i>	
PROBING THE GLOBAL DELOCALIZATION TRANSITION IN THE DE MOURA-LYRA MODEL WITH THE KERNEL POLYNOMIAL METHOD	128
<i>Khan N. A., Santos Pires J. P., Viana Parente Lopes J. M., Lopes Dos Santos J. M. B.</i>	
Author Index	