

Publicaciones científicas 2015 del CInC

DEPARTAMENTO DE MATEMÁTICAS

M.K. Atakishiyeva, N.M. Atakishiyev and K. B. Wolf.
Kravchuk Polynomials and irreducible representations of the rotation group $SO(3)$.
Bol. Soc. Mat. Mex. **21** (2015)27-37. DOI: 10.1007/s40590-014-0015-9

M.K. Atakishiyeva and N.M. Atakishiyev,
On the raising and lowering difference operators for eigenvectors of the finite Fourier transform.
Journal of Physics: Conference Series **597** (2015) 012012. DOI: 10, 1088/1742-6596/1/012012.

Yu. I. Karlovich and I. Loreto-Hernández.
 C^ -Algebra of Nonlocal Convolution Type Operators with Piecewise Slowly Oscillating Data.*
J. Operator Theory **73** (2015) 211-242. DOI:10.7900/jot2013nov11.2039.

Yu. I. Karlovich, J. Loreto-Hernández, I. M. Spitkovsky,
Factorization of some triangular Matrix Functions and its Applications.
Operators and Matrices **9** (2015) 1-29.

E. Espinoza-Loyola, **Yu. I. Karlovich** and O. Vilchis-Torres,
 C^ - Algebras of Bergman Type Operators with Piecewise Constant Coefficients over Sectors.*
Integral Equations and Operator Theory **83** (2015) 243-269.

Yu.I. Karlovich,
 C^ -algebras of Bergman Type Operators with Continuous Coefficients on Polygonal Domains.*
Operators and Matrices **9** (2015) 773-802.

A.Yu. Karlovich, **Yu.I. Karlovich**. A.B. Lebre,
On a Weighted Singular Integral Operator with Shifts and Slowly Oscillating Data.
Complex Analysis and Operator Theory (2015) 1-31. DOI:10.1007/s11785-015-452-0

A.Grishkov, P.Plaumann, M.Rasskazova, **L. Sabinina**,
Half-automorphisms of free automorphic Moufang loops.
Matemathical Notes **98** (2015) 133-135.

L. Sbitneva, N. Moreno, M. Cervantes, **R. Valdez**, *Una propuesta didáctica para la enseñanza del determinante.* Acta de la XXVIII Reunión Latinoamericana de Matemática Educativa,
RELME **28** (2015) 827-835.

L. Sbitneva, N. Moreno, **D. Rivera**, B. García, *Evaluation of the efficiency of our teaching practice based on osa theory: the case of linear algebra course in b-learning.*

Proceedings ICERI 2015 ID **2089** (2015) 4381-4387. ISBN 9788460826576

Capítulos de libro

Yu.I. Karlovich, V.A. Mozel. *C*-algebras of two-dimensional singular integral operators with shifts.* Chapter in the book *Current Trends in Analysis and Its Applications, Trends in Mathematics*, Eds. V.V. Mityushev, M.V. Ruzhansky. pp. 571-581. Birkhäuser, Basel (2015). ISBN: 978-3319125763.

LIBROS

Rogelio Valdez, R. Bulajich, J.A. Gómez, *Topics in Algebra and Analysis*, Birkhäuser Verlag AG. Basel, Switzerland, 2015.

DEPARTAMENTO DE FÍSICA

R. L. Restrepo, F. Urgan, E. Kasapoglu, **M.E. Mora-Ramos**, A.L. Morales, C.A. Duque, *The effects of intense laser field and applied electric and magnetic fields on optical properties of an asymmetric quantum well.* Physica B **457** (2015) 165-171.

V. Tulupenko, C. A. Duque, R. Demediuk, V. Belykh, A. Tiutiunyk, V. Akimov, R. L. Restrepo, **M.E. Mora-Ramos**, V. Poroshin, A. L. Morales, O. Fomina, *On some new effects in delta-doped QWs.* Physica E **66** (2015) 162-169.

E. Kasapoglu, C.A. Duque, **M.E. Mora-Ramos**, R. L. Restrepo, F. Urgan, U. Yesilgul, H. Sari, I. Sökmen, *Combined effects of intense laser field, electric and magnetic fields on the nonlinear optical properties of the step-like quantum well.* Materials Chemistry and Physics **154** (2015) 170-175.

F. Urgan, J. C. Martínez-Orozco, R.L. Restrepo, **M.E. Mora-Ramos**, E. Kasapoglu, C.A. Duque, *Nonlinear optical rectification and second-harmonic generation in a semi-parabolic quantum well under intense laser field.* Superlattices and Microstructures **81** (2015) 26-33.

E. Giraldo-Tobón, W. Ospina, G.L. Miranda, **M.E. Mora-Ramos**, *Influence of applied electric fields on the electron related second and third-order nonlinear optical responses in two dimensional elliptic quantum dots.* Superlattices and Microstructures **83** (2015) 157-167.

C. M. Duque, A. L. Morales, **M.E. Mora-Ramos**, C.A. Duque, *Exciton-related optical properties in zinc-blende GaN/InGaN quantum wells under hydrostatic pressure.* Physica Status Solidi B **252** (2015) 670-677.

K. A. Rodríguez-Magdaleno, J. C. Martínez-Orozco, I. Rodríguez-Vargas, **M.E. Mora-Ramos**, C.A. Duque, *High-pressure effects on the intersubband optical absorption*

coefficient and relative refractive index change in an asymmetric double δ -doped GaAs quantum well.

Physica Status Solidi B **252** (2015) 683-688.

S. A. A. Kohl, R. L. Restrepo, **M.E. Mora-Ramos**, C.A. Duque, *Shallow-impurity-related binding energy and linear optical absorption in ring-shaped quantum dots and quantum well wires under applied electric field.* Physica Status Solidi B **252** (2015) 786-794.

J.C. Martínez-Orozco, **M.E. Mora-Ramos**, C.A. Duque, *Electron-related optical properties in T-shaped AlGaAs/GaAs quantum wires and dots.* European Physical Journal B **88** (2015) 115.

J.D. Correa, **M.E. Mora-Ramos**, *Donor impurity states and related optical response in a lateral coupled dot-ring system under applied electric field.* Physica B **472** (2015) 25-33.

E. Kasapoglu, C. A. Duque, **M.E. Mora-Ramos**, I. Sökmen, H. Sari, *The effects of the intense laser field on the nonlinear optical properties of a cylindrical GaAlAs/GaAs quantum dot under applied electric field.* Physica B **474** (2015) 15-20.

O. Sotolongo-Costa, L. M. Gaggero-Sager, **M. E. Mora-Ramos**, *A non-extensive statistical model for time-dependent multiple breakage particle-size distribution.* Physica A **438** (2015) 74-80.

C.M. Duque, J.D. Correa, A. L Morales, **M. E. Mora-Ramos**, C. A. Duque, *Laterally coupled circular quantum dots under applied electric field.* Physica E **77** (2015) 34-43.

C. A. Duque, V. I. Akimov, R. Demediuk, V. Belykh, A. Tiutiunnyk, A. L. Morales, R. L. Restrepo, O. Nalivayko, O. Fomina, **M. E. Mora-Ramos**, V. Tulupenko, *About possible THz modulator on the base of delta-doped QWs.* Superlattices and Microstructures **87** (2015) 5-11.

C. A. Duque, **M. E. Mora-Ramos**, J. D. Correa, *Donor impurity related second and third harmonic generation and optical absorption in GaAs-(Ga,Al)As 3D coupled quantum dot-rings under applied electric field.* Superlattices and Microstructures **87** (2015) 25-31.

M.E. Mora-Ramos, C.A. Duque, *The formation of indirect excitons in atomic layer doped systems.* Superlattices and Microstructures **87** (2015) 32-37.

H.A. Gómez-Urrea, C.A. Duque, **M.E. Mora-Ramos**, *The polaritonic spectrum of two-dimensional photonic crystals based on uniaxial polar materials.* Superlattices and Microstructures **87** (2015) 58-63.

M.A. Londoño, J.H. Rúa, J.D. Giraldo-Gómez, H. Montegranario, **M.E.Mora-Ramos**, C.A. Duque,

A meshless scheme for the calculation of electron and hole states in laterally coupled GaAs-Ga_{1-x}Al_xAs quantum dots under applied electric field. Superlattices and Microstructures **87** (2015) 77-82.

C.M. Duque, A.L. Morales, **M.E. Mora-Ramos**, C.A. Duque, *Electron-related Raman scattering in dilute nitride GaAs/In_xGa_{1-x}NyAs_{1-y} cylindrically shaped quantum dots.* Superlattices and Microstructures **87** (2015) 83-88.

D.A. Ospina, V. Akimov, **M.E. Mora-Ramos**, A.L. Morales, V. Tulupenko, C.A. Duque, *Optical properties of a multibarrier structure under intense laser fields.* Superlattices and Microstructures **87** (2015) 109-114.

H.A. Gómez-Urrea, C.A. Duque, **M.E. Mora-Ramos**, *The phonon-polariton spectrum of one-dimensional Rudin-Shapiro photonic superlattices with uniaxial polar materials.* Superlattices and Microstructures **87** (2015) 115-119.

C.A. Duque, V. I. Akimov, R. Demediuk, V. Belykh, A. Tiutiunnyk, A. L. Morales, R. L. Restrepo, **M E. Mora-Ramos**, O. Fomina, V. Tulupenko, *Intersubband linear and nonlinear optical response of the delta-doped SiGe quantum well.* Superlattices and Microstructures **87** (2015) 125-130.

A. Tiutiunnyk, V. Tulupenko, V. Akimov, R. Demediuk, A.L. Morales, **M.E. Mora-Ramos**, A. Radu, C.A. Duque, *Study of electron-related intersubband optical properties in three coupled quantum wells wires with triangular transversal section.* Superlattices and Microstructures **87** (2015) 131-136.

C. Rummel, E. Abela, R. G. Andrzejak, M. Hauf, C. Pollo, **M. Müller**, C. Weisstanner, R. Wiest, K. Schindler, *Resected Brain Tissue, Seizure Onset Zone and Quantitative EEG Measures: Towards Prediction of Post-Surgical Seizure Control*, PLoS ONE **10**(10): e0141023 (2015). DOI:10.1371/journal.pone.0141023

D. Villegas, F. de León-Pérez, **R. Pérez-Álvarez**, J. Arriaga, *Phonon tunneling through a double barrier system*, Physica B **463** (2015) 7-14.

D.G. Santiago-Pérez, C. Trallero-Giner, **R. Pérez-Álvarez**, L. Chico, and G.E. Marques, *Electron-phonon deformation potential interaction in coreshell Ge-Si and Si-Ge nanowires*, Physical Review B **91** (2015) 075312.

M. Silba-Vélez, **R. Pérez Álvarez** y D. A. Contreras-Solorio, *Transmission and escape in finite superlattices with Gaussian modulation*, Revista Mexicana de Física **61** (2015) 132-136.

R. Pérez-Álvarez, R. Pernas-Salomón, V.R. Velasco, *Relations between transfer matrices and numerical stability analysis to avoid the Omega d problem*, SIAM Journal of Applied Mathematics **75** (2015) 1403-1423.

R. Pérez-Álvarez, D. G. Santiago-Pérez, L. Chico, *Continuum model for low-frequency phonons of BN nanotubes*, Physica E: Low-dimensional Systems and Nanostructures **74** (2015) 129-134.

R. Pérez-Álvarez, D. G. Santiago-Pérez, C. Trallero-Giner, *Modos vibracionales ópticos en nanohilos cilíndricos de Ge-Si y Si-Ge*, Internet Electron. J. Nanosc. Moletron. **13** (2015) 2251-2261.

R. Pérez-Álvarez, R. Pernas-Salomón, V. R. Velasco, *General form of the Green's function regular at infinity for the homogeneous Sturm-Liouville matrix operator*. Applied Mathematics and Computation **269** (2015) 824-833.

A. Ochoa-Calle, **C. Zicovich-Wilson**, R. Hernández, **A. Ramírez-Solís**, *Understanding the ϵ and ζ high-pressure solid phases of oxygen. Systematic Periodic Density Functional. Theory studies using localized atomic basis*. Journal of Chemical Theory and Computation **11** (2015) 1195-2105. DOI:10.1021/acs.jctc.5b00017

A. Ochoa-Calle, **C. Zicovich-Wilson**, **A. Ramírez-Solís**. *On the true nature of the ζ oxygen phase and its transition from ϵ at very high pressures. A first principles analysis*. Physical Review B **92** (2015) 085148. DOI: 10.1103/PhysRevB.92.085148.

A. Ochoa-Calle, **C. Zicovich-Wilson**, **A. Ramírez-Solís**. *On the Raman and infrared vibrational spectra of the ϵ and ζ phases of oxygen. Systematic DFT studies with localized basis sets*. Chemical Physics Letters **638** (2015) 82-86. DOI: 10.1016/j.cplett.2015.08.036

J. L. Ocampo-Espindola, E. Ramírez-Álvarez, F. Montoya, P. Parmananda, **M.A. Rivera**, *Inducing rotational motion in the mercury beating heart system*. J. Solid State Electrochemistry **19** (2015) 3297.

D. Kumar, H. Singh, P. Parmananda, A. Q. Contractor, **M. A. Rivera**, K. Kuramoto, *Transition in an ensemble of mercury beating heart systems*, Chaos **25** (2015) 064609.

R. Salgado-García and C. Maldonado. *Unbiased diffusion of Brownian particles on disordered correlated potentials*. Journal of Statistical Mechanics: Theory and Experiment **06** (2015) P06012.

J.E. Nájera-Carpio, **F. Vázquez**, **A. Figueroa**, *Modeling and Analysis of Entropy Generation in Light Heating of Nanoscaled silicon and germanium thin films*. Entropy **17** (2015), 4786-4808.

I. Rivera, **A. Figueroa**, **F. Vázquez**, *Optimization of Supercooling Effect in Nanoscaled Thermoelectric Layers*. Communications on Applied and Industrial Mathematics **7** (2015). In press.

F.B. Yousif, *Low pressure CH₂Cl₂ plasma discharge*, Journal of Advances in Physics **8** (2015) 2240-2248.

K. Valdiviés-Cruz, A. Lam, **C. M. Zicovich-Wilson**, *Chemical interaction of water molecules with framework Al in acid zeolites: a periodic ab initio study on H-clinoptilolite*. Phys. Chem. Chem. Phys. **17** (2015) 23657-23666. DOI: 10.1039/C5CP03268G

E.I. Román-Román, **C. M. Zicovich-Wilson**. *The role of long-range van der Waals forces in the relative stability of SiO₂ -zeolites*. Chemical Physics Letters **619** (2015) 109-114.
DOI: 10.1016/j.cplett.2014.11.044

Capítulos de libro

A. Ramírez-Solís, J.I. Amaro-Estrada, *Theoretical Studies of the Solvation of Abundant Toxic Mercury Species in Aqueous Media*. Chapter 10 in the book *Quantum Modeling of Complex Molecular Systems*, Challenges in Computational Chemical Physics, Vol. **21**. Eds. Jean-Louis Rivail, M. Ruiz-López and X. Assfeld. pp. 275-301. Springer, Berlin. 2015.

A. Figueroa, J.A. Rojas, J. Rosales and **F Vázquez**. *Electromagnetically driven flow between concentric spheres: experiments and simulation*, in the book *Recent Advances in Fluid Dynamics with Environmental Applications*. Eds. J. Klapp, L. G. Sigalotti, A. Medina, A. López, G. Ruiz-Chavarría. Springer, Berlin. 2015.

A. Figueroa, **R. Salgado-García**, J. Rodríguez, **F.B. Yousif**, **M.A Rivera** and **F. Vázquez**, *Stochastic and Non-linear Dynamics in Low Temperature Plasmas*, in the book *Plasma Science and Technology*. Editorial Intech , 2015.

DEPARTAMENTO DE COMPUTACIÓN Y ROBÓTICA

W. Gaona, E. Escobar, **J. Hermosillo**, **B. Lara**. *Anticipation by Multi-modal association through an artificial mental imagery process*. Connection Science **27** (2015) 68-88.

W. Gaona, E. Escobar, **J. Hermosillo**, **B. Lara**. *Adquisición de conceptos espaciales en un agente autónomo artificial a través de simulaciones internas*. Nova Scientia Revista Electrónica de la Univ. La Salle del Bajío **7** (2015) 127-161.

N. Vakhania, D. Pérez, L. Carballo. *Theoretical Expectation versus Practical Performance of Jackson's Heuristic*. Mathematical Problems in Engineering, Vol. **2015**, Article ID 484671 (2015).
[DOI: 10.1155/2015/484671](https://doi.org/10.1155/2015/484671)

N. Vakhania, J.A. Hernández, C. Zavala. *A single-machine scheduling problem to minimize the maximum lateness is tightly related with a variation of bin packing problem with different bin capacities.* Ciencia e Tecnica Vitivinicola Journal Vol. **30** (2015) 2.

S. P. Verma, **L. Díaz-González**, J.S. Armstrong-Altrin, *Application of a new computer program for tectonic discrimination of Cambrian to Holocene clastic sediments.* Earth Science Informatics (2015) 1-15. Published online: 12 November 2015. DOI: 10.1007/s12145-015-0244-0.

R. Chavez-Romero, A. Cárdenas, **J.M. Rendón-Mancha**, K. M. Vernaza and D. Piovesan. *Inexpensive Vision-Based System for the Direct Measurement of Ankle Stiffness during Quiet Standing.* Journal of Medical Devices **9** (2015) 041011-041011-8.

J. Fuentes, J. Ruiz, **J.M. Rendón**. *Visual simultaneous localization and mapping: a survey.* Artificial Intelligence Review-Springer. Vol. **43** (2015) 55-81.

Capítulos de libro

N. Vakhania. *Worst-case analysis versus average-case analysis for combinatorial optimization problems.* Chapter 7 in the book *Advances in Mathematics Research* Vol. **19**, Albert Baswell (ed.) pp. 103-118. Nova Science Publishers, New York (2015).

F. Fernández-Reyes, **J. Hermosillo-Valadez**, Y. Garcés-Suárez. *Term Dependence Statistical Measures for Information Retrieval Tasks.* Chapter in the book *Advances in Artificial Intelligence and Soft Computing* Vol. **9413**, Lecture Notes in Computer Science. pp 83-94. Springer, Berlin 2015.