Theoretical Physics Group
National Institute of Physics
2013 Accomplishment Report

Eric A. Galapon Group

ISI Publication


SPP 2013


D. Sombillo & E.A. Galapon, Expectation value of CTOA-operator for double barrier potential, SPP 2013, Cebu.

J. Bunao & E.A Galapon, A dense domain for T_{-3,-3} in L2(-infinity,infinity), SPP 2013, Cebu.

M. Flores & Galapon, Bipartite entanglement dynamics of 2 and 3 qubit systems in a single mode reservoir with two excitations, SPP 2013, Cebu.

P. Blancas & E.A. Galapon, Quantum cloaking of a hard sphere by introducing it a potential coating, SPP 2013, Cebu.

V. Villegas & E.A. Galapon, Entanglement generation and enhancement in a two qubit system by local perturbation, SPP 2013, Cebu.

Projects

“An Investigation of the Universality of Exponential Superluminality in Quantum Tunneling”, funded by DOST and managed by NRCP, September 2012-September 2014.

“N-qubit bipartite entanglement dynamics with emphasis on entanglement preservation”, funded by Outright Research Grant, February 2013-January 2014 (Project No. 121218 PNSE).


Students

PhD Physics

Marvin Flores
Joseph Bunao
Robert Vitancol
Herbert Domingo

MS Physics

Philip Blancas
Reseith John Fajardo
John Paul Besagas

BS Physics

Vladimmir Villegas
Art Dumigpe
Christian Tica
Contributions to Theory Annual Report Esguerra/Yanga/Magpantay (January to December 2013)

Publications in ISI indexed journals:


Papers Presented in the 31st SPP Physics Congress, University of San Carlos, Talamban Campus, Cebu City, 23-25 October 2013


2. J.Tare, J.P. Esguerra, Space-fractional Schrodinger equation for a quadrupolar triple Dirac-delta potential

3. MA Fudolig, JP Esguerra, Elephant Walk with Single-Step Memory Lapse


5. N. Lamsen, JP Esguerra, Rapidity Distribution of a Tracer Particle in 1D Maxwell-Juttner Gas


7. MM Nayga, JP Esguerra, Levy Path-Integral Approach to the fractional Schrodinger equation with delta-perturbed infinite square well

8. M Aydinan, JP Esguerra, Two-dimensional persistent random walk with linearly increasing step size

9. L. Lorenzo, JP Esguerra, Pulse-propagation in an exponentially graded spring-mass system

Students who graduated:

Jayson Cosme, MS Physics, Summer 2013
Thesis: Ground State Properties of Tonks-Girardeau Gas in Harmonic Oscillator Potential with Multiple delta-Perturbations

Deborah Anne Lumantas, BS Applied Physics, 2nd Semester 2012-2013
Stellar Structure Calculations Using Piecewise Linear Emulators
Awards/Recognitions: 1) magna cum laude; 2) Most Outstanding BS Applied Physics Graduate
Ephraim Jabneel Eisma, BS Physics, 2nd Semester 2012-2013
Solutions to Persistent Random Walks with Probability of Rest in D dimensions
Awards/Recognitions: 1. cum laude, 2. Most Outstanding BS Physics Graduate

Miguel Antonio Fudolig, BS Physics, 2nd Semester 2012-2013
Apparent Superluminal Motion of Objects Moving at Relativistic Speeds
Awards/Recognitions: cum laude

**Ongoing Student Advisees as of December 2013**

**Verification needed:** Cilicia Uzziel Perez, Course: MA Physics, Adviser: Jose Magpantay

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Adviser</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bhazel Anne Rara Pelicano</td>
<td>PhD Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Mikaela Irene Fudolig</td>
<td>PhD Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Diandrew Lester Dy</td>
<td>PhD Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Kristian Hauser Villegas</td>
<td>PhD Physics</td>
<td>Jose Perico Esguerra/Danil Yanga</td>
</tr>
<tr>
<td>Niel Caedic</td>
<td>MS Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Leodegario U Lorenzo II</td>
<td>MS Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Kendrick Agapito</td>
<td>MS Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Diane Caneso</td>
<td>MS Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Jeffrey Tare</td>
<td>MS Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Pecier Paul Decierdo</td>
<td>MS Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Miguel Antonio Fudolig</td>
<td>MS Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Wilar Tan</td>
<td>MS Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Jan Tristram Acuna</td>
<td>BS Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Mary Madelynn Nayga</td>
<td>BS Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>James Vance</td>
<td>BS Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Noel Lamsen</td>
<td>BS Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Alan Presbitero</td>
<td>BS Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Macliing Aydinan</td>
<td>BS Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Derrick John Junio</td>
<td>BS Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
<tr>
<td>Gabriel Dizon</td>
<td>BS Physics</td>
<td>Jose Perico Esguerra</td>
</tr>
</tbody>
</table>

**Research Grants:**

Jose Perico H. Esguerra
Title: Pulse propagation in an exponentially graded spring-mass system
NIP Research Grant
Duration: 1 January 2013 to 31 December 2013