

## RESEARCH GROUP: MOLECULAR DYNAMICS OF COMPLEX SYSTEMS

### Publications in peer review Journals

1. C. Ferreira, H.F.M.C. Martiniano, B.J.C. Cabral, V. Aquilanti - Electronic excitation and ionization of hydrogen peroxide-water clusters: comparison with water clusters. *International Journal of Quantum Chemistry* 111 (7-8) (2011), 1824-1835.
2. Kaline Coutinho, Benedito J. Costa Cabral, Rogerio Custodio - Special Issue: Special Issue Dedicated to Sylvio Canuto Introduction. *International Journal of Quantum Chemistry* 111 (7-8) (2011), 1249-1250.
3. M. Arnaudon, A. B. Cruzeiro, N. Galamba - Lagrangian Navier–Stokes flows: a stochastic model. *J. Phys. A: Math. Theor.* 44 (17) (2011), 175501.
4. M. Mateus, N. Galamba, B.J.C. Cabral - Electronic properties of hydrogen-bonded complexes of Benzene-(HCN)<sub>1-4</sub>: comparison with benzene-(H<sub>2</sub>O)<sub>1-4</sub>. *J. Phys. Chem.* 115 (46) (2011), 13714-13723.
5. M. Mateus, N. Galamba, B.J.C. Cabral - Electronic properties of a methane-water solution. *Chem. Phys. Lett.* 506 (4-6) (2011), 183-189.
6. P. Jaramillo, K. Coutinho, B.J.C. Cabral, S. Canuto - Explicit solvent effects on the visible absorption spectrum of a photosynthetic pigment: chlorophyll-c2 in liquid methanol. *Chem. Phys. Lett.* 516 (4-6) (2011), 250-253.

## RESEARCH GROUP: ANALYSIS AND GEOMETRY IN MATHEMATICAL PHYSICS

### Publications in peer review Journals

1. A. Mikovic and M. Vojinovic - Effective action and semiclassical limit of spin foam models, *Classical and Quantum Gravity* 28 (22) (2011), 225004.
2. B. Brandolini, P. Freitas, C. Nitsch and C. Trombetti - Sharp estimates and saturation phenomena for a nonlocal eigenvalue problem, *Adv. Math.* 228 (4) (2011), 2352-2365.
3. C. Bastos, O. Bertolami, N.C. Dias, J.N. Prata: Entropic gravity, phase-space noncommutativity and the equivalence principle. *Classical and Quantum Gravity* 28 (12) (2011), 125007.
4. C. Bastos, O. Bertolami, N.C. Dias, J.N. Prata: Non-canonical phase-space noncommutativity and the Kantowski-Sachs singularity for black holes. *Physical Review D* 84 (2) (2011), 024005.
5. J. Faria Martins and A. Mikovic - Four-Dimensional Spin Foam Perturbation Theory, *SIGMA* 7 (2011), 094, 22 pages.
6. J. Kennedy - The nodal line of the second eigenfunction of the Robin Laplacian in  $R^2$  can be closed, *J. Differential Equations* 251 (12) (2011), 3606-3624.

7. N. Cirilo António, N. Manojlovic e A. Stolin - Algebraic Bethe Ansatz for deformed Gaudin model, *Journal of Mathematical Physics* 52 (10) (6) (2011), 103501, 15 pages.
8. N.C. Dias, A. Posilicano, J.N. Prata: Self-adjoint, globally defined Hamiltonian operators for systems with boundaries. *Communications on Pure and Applied Analysis* 10 (2011), 1687-1706.
9. N.C. Dias, M. De Gosson, F. Luef, J.N. Prata: A pseudo-differential calculus on non-standard symplectic space; spectral and regularity results in modulation spaces. *Journal de Mathématiques Pures et Appliquées* 96 (5) (2011) 423-445.
10. P. Freitas and I. Salavessa - A spectral Bernstein theorem, *Ann. Mat. Pura Appl.* 190 (1) (2011), 77-90.
11. P. P. Kulish and A. I. Mudrov - Twisting adjoint module algebras. *Lett. Math. Phys.* 95 (3) (2011), 233-247.
12. P.R.S. Antunes - Numerical calculation of eigensolutions of 3D shapes using the Method of Fundamental Solutions, *Numerical Methods for Partial Differential Equations* 27 (6) (2011), 1525-1550.
13. P.R.S. Antunes - On the buckling eigenvalue problem, *Journal of Physics A: Mathematical and Theoretical* 44 (21) (2011), 215205 (13 pages).
14. P.R.S. Antunes and A. Henrot - On the range of the first two Dirichlet and nontrivial Neumann eigenvalues of the Laplacian, *Proceedings of the Royal Society A* 467 (2130) (2011), 1577-1603.
15. P.R.S. Antunes and P. Freitas - On the inverse spectral problem for Euclidean triangles, *Proceedings of the Royal Society A* 467 (2130) (2011), 1546-1562.

### **Other publications**

(Include only Books, chapters or full papers published in conference proceedings)

1. A. Mikovic and J. Faria Martins - Spin Foam State Sums and Chern-Simons Theory, "Chern-Simons Theory: 20 Years After", editors: J. E. Andersen, H.U. Boden, A. Hahn and B. Himpel (American Mathematical Society/International Press, 2011), 277-284.
2. C. Bastos, O. Bertolami, N.C. Dias, J.N. Prata - Noncommutative black holes and the singularity problem. *Journal of Physics: Conference Series* 314 (1) (2011), 012042.
3. T. Charters and P. Freitas - Characterization and Parameterization of the Singular Manifold of a Simple 6–6 Stewart Platform, J.A. Tenreiro Machado et al., eds. *Nonlinear Science and Complexity, NSC '08 Porto* (2011), 255-262.

## RESEARCH GROUP: STOCHASTIC ANALYSIS, PATH INTEGRALS AND APPLICATIONS

### Publications in peer review Journals

1. A.B. Cruzeiro - Stochastic calculus of variations for the diffeomorphisms group - Bulletin des Sciences Mathématiques 135 (6-7) (2011), 557-564.
2. M. Arnaudon, A.B. Cruzeiro, N. Galamba - Lagrangian Navier-Stokes flows: a stochastic model, J. Phys. A: Math. Theor. 44 (2011), 175501.
3. V. Dragovic, K. Kucic - New examples of systems of the Kowalevski type, Regular and Chaotic Dynamics 16 (5) (2011), 484-495.
4. V. Dragovic – Poncelet-Darboux curves, their complete decomposition and Marden theorem. Int. Math. Res. Not. IMRN 2011 (15) (2011), 3502-3523.

### Other publications

(Include only Books, chapters or full papers published in conference proceedings)

1. A.B. Cruzeiro - Hydrodynamics, Probability and the Geometry of the Diffeomorphisms Group, in Seminar on Stochastic Analysis, Random Fields and Applications VI, Eds: R. Dalang, M. Dozzi, F. Russo, Progress in Probability 63 (2011), 83-93.
2. A.B. Cruzeiro, E. Shamarova - On a forward-backward system associated to the Burgers equation, in Stochastic Analysis with Financial Applications, A. Kohatsu-Higa, N. Privault, S.J. Sheu ed., Progress in Probability 65 (2011), 43-59.
3. C. Leonard, J.C. Zambrini – A Probabilistic Deformation of Calculus of Variations with Constraints, Seminar on Stochastic Analysis, Random Fields and Applications VI, Eds. Dalang, R.C.; Dozzi, M.; Russo, F., Progress in Probability 63 (2011), 177-189.
4. V. Dragovic, M. Radnovic – Poncelet porisms and beyond. Integrable billiards, hyperelliptic Jacobians and pencils of quadrics. Frontiers in Mathematics, Birkhäuser/Springer Basel AG, Basel, 2011. Viii+293 pp. ISBN: 978-3-0348-0014-3