

RESEARCH GROUP: MOLECULAR DYNAMICS OF COMPLEX SYSTEMS

Publications in peer review Journals

1. N. Galamba; B.J.C. Cabral - Born-Oppenheimer Molecular Dynamics of the Hydration of Na⁺ in a Water Cluster, JOURNAL OF PHYSICAL CHEMISTRY B, Volume: 113 Issue: 50 (2009), 16151-16158.
2. N. Galamba; R.A. Mata; B.J.C. Cabral - Electronic Excitation of Cl⁻ in Liquid Water and at the Surface of a Cluster: A Sequential Born-Oppenheimer Molecular Dynamics/Quantum Mechanics Approach, JOURNAL OF PHYSICAL CHEMISTRY A, Volume: 113, Issue: 52 (2009), 14684-14690.
3. P.M. Nunes; S.G. Estacio; G.T. Lopes; F. Agapito; R.C. Santos; B.J.C. Cabral; R.M.B. dos Santos; J.A.M. Simões - Energetics of tert-Butoxyl Addition Reaction to Norbornadiene: A Method for Estimating the pi-Bond Strength of a Carbon-Carbon Double Bond, JOURNAL OF PHYSICAL CHEMISTRY A, Volume: 113, Issue: 23 (2009), 6524-6530.
4. R.A. Mata; B.J.C. Cabral; C. Millot; K. Coutinho; S. Canuto - Dynamic polarizability, Cauchy moments, and the optical absorption spectrum of liquid water: A sequential molecular dynamics/quantum mechanical approach, JOURNAL OF CHEMICAL PHYSICS, Volume: 130, Issue: 1 (2009), 014505.
5. R.A. Mata; H. Stoll; B.J.C. Cabral - A Simple One-Body Approach to the Calculation of the First Electronic Absorption Band of Water, JOURNAL OF CHEMICAL THEORY AND COMPUTATION, Volume: 5, Issue: 7 (2009), 1829-1837.
6. T.L. Fonseca; M.A. Castro; B.J.C. Cabral; K. Coutinho; S. Canuto - Dipole polarizability and Rayleigh light scattering by the hydrated electron, CHEMICAL PHYSICS LETTERS, Volume: 481, Issue: 1-3 (2009), 73-77.

RESEARCH GROUP: ANALYSIS AND GEOMETRY IN MATHEMATICAL PHYSICS

Publications in peer review Journals

1. C. Bastos; O. Bertolami; N.C. Dias; J.N. Prata - Black Holes and Phase-Space Noncommutativity, Phys. Rev. D 80 (2009), 124038.
2. C. Bastos; O. Bertolami; N.C. Dias; J.N. Prata - Noncommutative quantum mechanics and quantum cosmology, Int. J. Mod. Phys. A 24 (2009), 2741.
3. C.J.S. Alves; P.R.S. Antunes - The Method of Fundamental Solutions applied to the calculation of eigensolutions of a general 2D simply connected plate, Int. J. Num. Meth. Eng. 77 (2009), 177-194.

4. D. Borisov; P. Freitas - Eigenvalue asymptotics, inverse problems and a trace formula for the linear damped wave equation, *J. Differential Equations* 247 (2009), 3028-3039.
5. D. Borisov; P. Freitas - Singular asymptotic expansions for Dirichlet eigenvalues and eigenfunctions on thin planar domains, *Ann. Inst. H. Poincaré Anal. Non Linéaire* 26 (2009) 547-560.
6. J.F. Martins; A. Mikovic - Spin foam perturbation theory for 3d quantum gravity, *Comm. Math. Phys.* 288 (2009), 745-772.
7. N.C. Dias; J.N. Prata - A multiplicative product of distributions and applications to linear differential equations with distributional coefficients, *J. Math. Anal. Appl.* 359 (2009), 216-228.
8. N.C. Dias; J.N. Prata - Exact master equation for a noncommutative Brownian particle, *Ann. Phys.* 324 (2009), 73-96.
9. N.C. Dias; J.N. Prata - The Narcowich-Wigner spectrum of a pure state, *Rep. Math. Phys.* Vol. 63, No. 1 (2009), 43-52.
10. P. Freitas - On the effect of sharp rises in blood pressure in the Shah-Humphrey model for intracranial saccular aneurysms, *Biomech. Model. Mechanobiology* 8 (2009), 457-471.
11. R.K. Wojciechowski - Heat kernel and essential spectrum of infinite graphs, *Indiana Univ. Math. J.* 58 (2009), 1419-1441.

Other Publications

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

1. A. Mikovic (Editor) - Proceedings of the Second Workshop on Quantum Gravity and Non-commutative Geometry, Lisbon, 19-21 September 2008, *Int. J. Mod. Phys.*, World Scientific, Vol. 24, N° 15, Special issue, 156 pages, June 2009.
2. C. Bastos; O. Bertolami, N.C. Dias, J.N. Prata - Noncommutative quantum cosmology, *J. Phys.: Conf. Ser.* 174 (2009), 012053.
3. M. Ilin; P.P. Kulish; V.D. Lyakhovsky - On the properties of branching coefficients for affine Lie algebras (in Russian) *Algebra i Analiz* 21, no. 2 (2009), 52-70.
4. P.P. Kulish - Twist Deformations of Quantum Integrable Spin Chains, *Lecture Notes in Physics* Volume 774 (2009), 167-190.
5. T. Charters; R. Enguiça; P. Freitas - Detecting singularities of Stewart platforms, *Mathematics-in-Industry Case Studies* 1 (2009), 66-80, Fields Institute Publications.

RESEARCH GROUP: STOCHASTIC ANALYSIS, PATH INTEGRALS AND APPLICATIONS

Publications in peer review Journals

1. A.B. Cruzeiro; E. Shamarova - Navier-Stokes equations and forward-backward SDEs on the group of diffeomorphisms of a torus, *Stoch. Proc. and their Applic.* 119 (2009), 4034-4060.
2. A.B. Cruzeiro; P. Malliavin - Stochastic calculus of variations on complex line bundle and construction of unitarizing measures for the Poincaré disk, *J. Funct. Anal.* 256 (2) (2009), 385-408.
3. V. Dragovic - Multi-valued hyperelliptic continued fractions of generalized Halphen type, *International Math. Research Notices*, no. 10 (2009), 1891-1932.
4. V. Dragovic; B. Gajic - Elliptic curves and a new construction of integrable systems, *Regular and Chaotic Dynamics*, Vol. 14, No 4-5 (2009), 360-372.
5. V. Dragovic; B. Gajic; B. Jovanovic - Singular Manakov flows and geodesic flows on homogeneous spaces of $SO(n)$, *Transformations Groups*, Vol. 14 (3) (2009), 513-530.
6. V. Dragovic; B. Gajic; B. Jovanovic - Systems of Hess-Appel'rot type and Zhukovskii property, *Int. Journal Geometric Methods in Modern Physics*, Vol. 6, No. 8 (2009), 1-52.
7. V. Dragovic; M. Radnovic - Bifurcations of Liouville Tori in Elliptical Billiards, *Regular and Chaotic Dynamics*, Vol. 14, No 4-5 (2009), 373-388.

Other Publications

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

1. A.B. Cruzeiro; P. Malliavin – Renormalized stochastic calculus of variations for a renormalized infinite-dimensional Brownian motion, *Stochastics*, vol. 81, 3-4 (2009), 385-399.
2. F. Cipriano; H. Ouerdiane; R. Vilela Mendes - Stochastic solution of a KPP-type nonlinear fractional differential equations, *Frac. Calc. Appl. Anal.* 12, n°1 (2009), 47-56.
3. J.C. Zambrini - On the geometry of the Hamilton-Jacobi-Bellman equation, *Journal of Geometric Mechanics*, vol. 1, n°3 (2009), 369-387.
4. V. Dragovic; B. Gajic; B. Jovanovic - Rigid body systems of Hess-Appel'rot type and partial reductions, in: *Geometric Methods in Physics*, AIP, Melville, New York, 2009, 72-79.