ANTONIO SARSA
Departamento de Física
Facultad de Ciencias
Universidad de Córdoba
E-14071 Córdoba, Spain
PHONE: (957) 212162, FAX:(957) 218627
E-mail: fa1sarua@uco.es

Position:

Profesor Titular de Universidad 05/August/2004 Universidad de Córdoba
Departamento de Física

Education:

- **Universidad de Granada** Undergraduate in Physics, July 1993.

- **Universidad de Granada** Ph.D. in Physics, April 1998.
  Dissertation: Correlations in atoms: Global properties.
  Thesis Advisors: Profs.: Enrique Buendía and Francisco J. Gálvez.

Research Experience:

- SISSA September 2000-present. Quantum Monte Carlo simulations of quantum solids and fluids in confined geometries with and without impurities.

- SISSA and Arizona State University. September 1999-present. Auxiliary field diffusion Monte Carlo for nuclear physics problems.

- Universitat Poltecnica de Catalunya and Arizona State University. July 1999-present. Diffusion Monte Carlo methods with forward walking techniques in atoms.

- Arizona State University. September 1998-present. Path Integral Monte Carlo calculations of quantum complexes and extended boson systems, exact determination of ground state properties.

- Universidad de Granada and Arizona State University. July 1998-present. Variational Monte Carlo calculations on atomic nuclei.

- Arizona State University. September 1998-present. Quantum Monte Carlo calculations of constrained systems with a mixture of rigid bonds and floppy degrees of freedom.

- Universidad de Granada and Arizona State University. April 1998-present. Application of Monte Carlo methods to urban climatology theoretical studies.

- Universidad de Granada and Arizona State University. January 1994-present. Variational Monte Carlo calculation of ground state properties in position and momentum spaces for atomic systems.

- Universidad de Granada. January 1997-present. Calculation of accurate solutions of the Schrödinger equation for three and four particle systems interacting via Coulomb forces and determination of one and two body properties.

- University of Florida. October-December 1995. Calculation and implementation of some integrals appearing in the Molecular Coupled Cluster method in a first quantization formalism.

- Universidad de Granada. May 1992-December 1995. Spectral and structural properties for functions of type Hypergeometric type. Obtention of rigorous inequalities among local and global properties of densites of many fermion systems.

Teaching Experience:

- **Universidad de Córdoba** from 2005-06.
  Classical Electrodynamics, undergraduate courses.

- **Universidad de Córdoba** from 2004-05.
  Quantum Field Theory, undergraduate courses.

- **Universidad de Córdoba** from 2003-04.
  Nuclear and Particle Physics, undergraduate courses.

- **Universidad de Córdoba** from 2003-04.
  Atomic and Molecular Physics, undergraduate courses.

- **Universidad de Granada** 1998
  Mathematical Methods for Physicists, undergraduate courses.

- **Universidad de Granada** 1996
  Atomic and Nuclear laboratory, undergraduate courses.

Academic Responsabilities:

- **Universidad de Córdoba** from 1 October 2007 to 30 June 2009 Academic Coordinator of the Physics Degree at the University of Cordoba.

- **Universidad de Córdoba** from 1 July 2009, present Vice Dean of Quality and Innovation, Faculty of Sciences, University of Cordoba.

Programing Experience:

- Numerical Methods:

- Eigenvalue problems, integrals, differential equations, interpolation.
- Self consistent methods to solve Hartree-Fock equations.
- Basis set expansions to solve the Schrödinger equation.
- Monte Carlo Methods:
  * Metropolis algorithm for many fermion systems.
  * Green's Function Monte Carlo for constrained systems.
  * Auxiliary Field Diffusion Monte Carlo for nuclear systems.
  * Path Integral ground state algorithm.
  * Monte Carlo simulation of heat transfer in urban structures.
  * Variational Monte Carlo in nuclei.

- Programing Languages: Fortran.

- Operating Systems: Unix, DOS, Windows.

- Software: Mathematica, Maple, MS Word, LaTeX.

- Parallel programing.

Grants:

- *Ramón y Cajal* research associate at Universidad de Granada March 2003- February 2004 Funded by the Spanish *Ministerio de Ciencia y Tecnología* .

- Postdoctoral Research Fellowship (Borsa di Richerca), at SISSA September 2000- February 2003 Funded by the Italian *MURST*.

- Postdoctoral Research Fellowship at the Arizona State University. May 1999- August 2000. Funded by Spanish *Ministerio de Educación y Cultura.*

- Postdoctoral Research Fellowship at the Arizona State University. September 1998- April 1999. Funded by *Universidad de Granada.*

- Predoctoral Research Fellowship at the Universidad de Granada. February 1988. Funded by *Universidad de Granada*.

- Predoctoral Research Fellowship at the Universidad de Granada. January 1994- December 1997. Funded by Spanish *Ministerio de Educación y Ciencia*.

- Undergraduate Research Fellowship at the Universidad de Granada. March 1992- September 1993. Funded by *Universidad de Granada*.

Languages:

Mothertonge Spanish. Fluent English. Medium level Italian.

Talks and Poster presentations:

- *Quantum similarity studies of atomic density functions in position and momentum spaces within the non-relativistic and relativistic approximations*, poster in ECAMP10. 10th European conference on Atoms, Molecules and Photons. Salamanca (España), July 2010

- *Molecular dynamics simulation of self assembled monolayers on surfaces and gold nanoparticles*, poster in ECAMP10. 10th European conference on Atoms, Molecules and Photons. Salamanca (España), July 2010

- *On the performance of graphics processing units on molecular dynamics simulations*, poster in ECAMP10. 10th European conference on Atoms, Molecules and Photons. Salamanca (España), July 2010

- *Relativistic and configuration-mixing effects on the low-lying levels of the Cr atom*, oral communication in the IBER 2008. 9th Iberian Joint Meeting on atomic and molecular physics. Capuchos (Portugal), September 2008

- *Perturbative analysis of relativistic effects in atoms*, poster in the IBER 2008. 9th Iberian Joint Meeting on atomic and molecular physics. Capuchos (Portugal), September 2008

- *Variational description of light nuclei from nucleon-nucleon interactions.*, oral communication in the XXXI Meeting of the Spanish Royal Society of Physics, Universidad de Granada (Spain), September 2007.

- *Quantum Monte Carlo for the electronic structure of atomic systems.* Recent progress in many body theories 14 Barcelona (Spain), July 2007.

- *Variational approach to the nuclear structure problem with correlated wave functions.* 30 years of many body in Spain: looking into the future Peñíscola (Spain), September 2004.

- *Microscopic calculations of neutron matter properties.* The Physics of Compact Objects Valencia (Spain), September 2003.

- *Rotational Constants of molecules inside* ^{4}He *droplets* The Physics of Quantum Fluid Clusters Trento (Italy), September 2002.

- *Applications of Auxiliary-Fields DMC to nuclear matter* oral comunication in the Workshop Quantum Monte Carlo. Recent advances and common problems in Condensed Matter and Field Theory. Trento (Italy), July 2001.

- *Quantum Monte Carlo for nucleon systems*, invited talk at the Universitat Politecnica de Catalunya, Barcelona (Spain), April 2001.

- *Electron correlation effects on momentum properties of atoms*, invited talk at the Universita di Milano, Milano (Italy), December 2000.

- *Monte Carlo calculations for nucleon systems*, oral comunication in the VII Hipalensis International Summer School. Sevilla (Spain), June 2000.

- *Quantum Monte Carlo of Solvated Molecules in rare gas clusters*, invited talk at the New York University, New York (USA), October 1999.

- *Effect of electron correlations on atomic properties*, invited talk at the Universitat Politecnica de Catalunya, Barcelona (Spain), July 1999.

- *Path Integral Monte Carlo in liquid ^4He*, poster presentation in the 4th Liquid Matter Conference, Granada (Spain), July 1999.

- *Variational Monte Carlo calculation of two body properties in atoms: Importance sampling considerations*, oral comunication in the 1998 Conference on Computational Physics, Granada (Spain), September 1998.

- *Monte Carlo simulation of atomic densities*, oral communication in the XXVI Meeting of the Spanish Royal Society of Physics, Universidad de Las Palmas de Gran Canaria (Spain), October 1997.

- *Three–body atomic and molecular systems*, poster presentation in the 15*th International Conference on Few-Body problems in Physics*, Groningen (The Netherlands), July 1997.

- *Atomic global properties in the Roothaan-Hartree-Fock approximation*, Universidad de Granada (Spain), October 1996.

- *Solution of the Roothaan–Hartree–Fock equations in a Modified Gaussian basis set*, oral communication in the XXV Meeting of the Spanish Royal Society of Physics, Universidad de Santiago de Compostela (Spain), September 1995.

Schools:

- *VII Hispalensis International Summer School. Nuclear Physics 2000: Master's Lessons*, Sevilla (Spain), June 2000.

- *European Summer School on Microscopic Quantum Many–Body Theories and their applications*, Valencia (Spain), September 1997.

- *Summer School in Quantum Chemistry*, Laredo (Spain), September 1994.

List of Publications, book chapters:

1. *Quantum Monte Carlo for the electronic structure of atomic systems .*
   Recent progress in many-body theories, Series on Advances in Quantum
   Many-Body Theory Vol 11, J. Boronat, G. E. Astrakharchik and F.
   Mazzanti (eds) (World-Scientific, Singapore, 2008)
   Authors: A. Sarsa, E. Buendía, F. J. Gálvez and P. Maldonado

2. *Deformed Mean Field versus α-cluster with Jastrow and linear state
   dependent correlations in p-shell nuclei.*
   Horizons in World Physics vol. 240 pp 15-32 (Nova Science Publica-
   tions, New York, 2003). Authors: E. Buendía, F. J. Gálvez, J. Praena
   and A. Sarsa,

3. *Non-homogeneous liquid ^4He in two dimensions.*
   Condensed Matter Theories, vol. 18 (Nova Science Publications, New
   York 2003). J. Navarro, J. Mur-Petit, A. Polls and A. Sarsa,

4. *Quantum Monte Carlo and nuclear astrophysics.*
   Quark-Gluon plasma and heavy ion collisions, pp 117-136 editado por
   W. A. Alberico, M. Nardi and M. P. Lombardo (World Scientific, Sin-
   gapore, 2002)
   Authors: S. Fantoni, A. Sarsa and K. E. Schmidt

5. *Auxiliary Field Diffusion Monte Carlo in neutron matter for nuclear
   astrophysics.*
   Quantum Monte Carlo: Recent Advances and Common Problems in
   Condensed Matter and Field Theory, p 143, M. Campostrini, M. P.
   Lombardo and F. Pederiva (eds) (Edizioni ETS, Pisa 2002)
   Authors: K. E. Schmidt, S. Fantoni and A. Sarsa

6. *Nuclear Matter with the Auxiliary Field Monte Carlo Method.*
   150 years of Quantum-Many body Theory, p 143, Series on Advances
   in Quantum Many-Body Theory Vol 5, Raymond F. Bishop, Klaus A.
   Gernoth and Niels R. Walet (eds) (World-Scientific, Singapore, 2001)
   Authors: S. Fantoni, A. Sarsa and K. E. Schmidt

7. *A Constrained Path Monte Carlo method for nucleon systems.*
   Recent progress in many-body theories, Series on Advances in Quantum Many-Body Theory Vol 3, Raymond F. Bishop, Klaus A. Gernoth, Niels R. Walet, and Yang Xian (eds) (World-Scientific, Singapore, 2000)
   Authors: K. E. Schmidt, A. Sarsa and S. Fantoni.

8. *Some applications of Monte Carlo Methods in urban climate.*
   Applied Sciences and the Environment, Vol 4, p. 131-121 WIT Press, Environmental Engeneering Series (1998).
   Authors: J. P. Montávez, A. Sarsa. A. Rodríguez, E. Sánchez and J. I. Jiménez.

List of Publications, refereed articles:

1. *Mg impurity in helium droplets.*
   J. Chem. Phys. **136**, 054301-1–054301–9 (2012)
   Authors: J. Navarro, D. Mateo, M. Barranco and A. Sarsa

2. *Variational Monte Carlo method with Dirichlet boundary conditions. Application to the study of confined system by impenetrable surfaces with different symmetries.*
   J. Chem. Theory Comput. **7**, 2786 (2011)
   Authors: A. Sarsa and C. Le Sech

3. *Relativistic quantum similarities in atoms in position and momentum spaces*
   Phys. Lett. A **375**, 2544 (2011)
   Authors: P. Maldonado, A. Sarsa, E. Buendía, and F.J. Gálvez

4. *Jastrow correlated and Quantum Monte Carlo calculations for the low-lying states of the carbon atom*
   J. Chem. Phys. **134**, 134102-1 (2011)
   Authors: P. Maldonado, A. Sarsa, E. Buendía and F. J. Gálvez

5. *Relativistic numerical-parameterized optimized effective potential for the ground state of the atoms He through Ra*
   At. Data and Nucl. Data Tables **97**, 109 – 133 (2011)
   Authors: P. Maldonado, A. Sarsa, E. Buendía and F. J. Gálvez

6. *A Molecular Dynamics Study of the Surfactant Surface Density of Alkanethiol Self-Assembled Monolayers on Gold Nanoparticles as a Function of the Radius*
   J. Phys. Chem. C **114**, 21309– 21314 (2010).
   Authors: A. Jiménez, A. Sarsa, M. Blázquez and T. Pineda

7. *Relativistic effects on complexity indexes in atoms in position and momentum spaces*
   Phys. Lett. A **374**, 3847 (2010)
   Authors: P. Maldonado, A. Sarsa, E. Buendía, and F.J. Gálvez

8. *Quantum Monte Carlo ground state energies for the singly charged ions from Li through Ar*
   J. Chem. Phys. **133**, 064102-1 (2010)
   Authors: P. Maldonado, A. Sarsa, E. Buendía, and F.J. Gálvez

9. *Near Degeneracy Effects on the Low-Lying Spectrum of the Iron Atom*
   J. Phys. Chem. A **114**, 1953– 1956 (2010).
   Authors: E. Buendía, F. J. Gálvez, P. Maldonado and A. Sarsa

10. *Quantum Monte Carlo ground state energies for the atoms Li through Ar*
    J. Chem. Phys. **131**, 044115-1 (2009)
    Authors: E. Buendía, F. J. Gálvez, P. Maldonado and A. Sarsa

11. *Optimized Effective Potential energies and ionization potentials for the atoms Li to Ra*
    Eur. Phys. J. D **50**, 229–235 (2008)
    Authors: F. J. Gálvez, E. Buendía, P Maldonado and A. Sarsa

12. *Explicitly correlated energies for neutral atoms and cations with $37 \leq Z \leq 54$*
    Chem. Phys. Lett. **465**, 190– 192 (2008)
    Authors: E. Buendía, F. J. Gálvez and A Sarsa

13. *Quantum Monte Carlo for 3d Transition Metal Atoms*
    J. Phys. Chem. A **112**, 2074– 2076 (2008).
    Authors: A. Sarsa, E. Buendía, F. J. Gálvez and P Maldonado

14. *State dependent correlated wave functions for sd shell nuclei*
    J. Phys. G: Nucl. Part. Phys. **34**, 2129– 2140 (2007).
    Authors: E. Buendía, F. J. Gálvez and A Sarsa

15. *Numerical-parameterized relativistic optimized effective potential for atoms*
    J. Phys. B: At. Mol. Opt. Phys. **40**, 3045– 3056 (2007).
    Authors: E. Buendía, F. J. Gálvez, P. Maldonado and A Sarsa

16. *Jastrow correlations and near degeneracy effects in neutral atoms and cations with $3 \leq Z \leq 36$*
    Chem. Phys. Lett. **436**, 352– 356 (2007)
    Authors: E. Buendía, F. J. Gálvez and A Sarsa

17. *Correlated wave functions for the ground state of the atoms Li through Kr*
Chem. Phys. Lett. **428**, 241– 244 (2006)
Authors: E. Buendía, F. J. Gálvez and A Sarsa

18. *Numerical-parameterized optimized effective potential for atoms*
J. Phys. B: At. Mol. Opt. Phys. **39**, 3575– 3585 (2006).
Authors: E. Buendía, F. J. Gálvez, P. Maldonado and A Sarsa

19. *Correlated wave functions to approach the bound excited states of Li^- and Be^-*
Eur. Phys. J. D **40**, 161–167 (2006).
Authors: F. J. Gálvez, E. Buendía and A. Sarsa

20. *Correlated wave functions for the ground and some excited states of the iron atom*
J. Chem. Phys. **124**, 154101 (2006).
Authors: E. Buendía, F. J. Gálvez and A. Sarsa

21. *Determination of simple correlated wave functions for few-electron systems using a Jastrow factor*
Phys. Rev. A **73**, 012512 (2006).
Authors: N. Umezawa, A. Sarsa, C. Le Sech and T. Chikyow

22. *One and two-body densities of carbon isoelectronic series in their low–lying multiplet states from explicitly correlated wave functions*
J. Chem. Phys. **124**, 044319 (2006).
Authors: F. J. Gálvez, E. Buendía and A. Sarsa

23. *$(HCl)_2$ and $(HF)_2$ in small helium clusters: Quantum solvation of hydrogen-bonded dimers*
J. Chem. Phys. **123**, 224313 (2005).
Authors: H. Jiang, A. Sarsa, G. Murdachaew, K. Szalewicz and Z. Bačić

24. *Density functional study of two-dimensional ^4He clusters*
Phys. Rev. B **72**, 104513 (2005).
Authors: J. Mur-Petit, A. Sarsa, J. Navarro and A. Polls

25. $1s^2 2p^3$ *and* $1s^2 2s^2 3l$, $l = s, p, d$ *excited states of boron isoelectronic series from explicitly correlated wave functions*
J. Chem. Phys. **123**, 034302 (2005).
Authors: F. J. Gálvez, E. Buendía and A. Sarsa

26. *Excited states of boron isoelectronic series from explicitly correlated wave functions*
J. Chem. Phys. **122**, 154307 (2005).
Authors: F. J. Gálvez, E. Buendía and A. Sarsa

27. *Projected multicluster model with Jastrow and linear state dependent correlations for* $12 \leq A \leq 16$ *nuclei.*
Phys. Rev. C **70**, 054315 (2004).
Authors: E. Buendía, F. J. Gálvez and A. Sarsa

28. *Parameterized optimized effective potential for the ground state of the atoms He through Xe*
At. Data and Nucl. Data Tables **88**, 163 (2004).
Authors: A. Sarsa, F. J. Gálvez and E. Buendía

29. *Auxiliary field diffusion Monte Carlo calculation of ground state properties of neutron drops*
Nucl. Phys. A **742**, 255– 268 (2004).
Authors: F. Pederiva, A. Sarsa, K. E. Schmidt and S. Fantoni

30. *Momentum space properties for the atoms Helium to Neon from energy-optimized explicitly correlated wave functions*
Int. J. Quantum Chem. **99**, 247 (2004).
Authors: F. J. Gálvez, E. Buendía and A. Sarsa.

31. *Two-dimensional clusters of liquid* ^4He
Phys. Rev. B **68**, 224514-1 – 224514-5 (2003)
Authors: A. Sarsa, J. Mur-Petit, A. Polls and J. Navarro

32. *Constrained path calculations of the* ^4He *and* ^{16}O *nuclei*
Eur. Phys. J. A **17**, 469–473 (2003)
Authors: K. E. Schmidt, S. Fantoni and A. Sarsa

33. *Parameterized optimized effective potential for atoms*
J. Phys. B: At. Mol. Opt. Phys., **36**, 4393 (2003).
Authors: A. Sarsa, F. J. Gálvez and E. Buendía.

34. *Two–electron properties for the beryllium atom from explicitly correlated wave functions*
Chem. Phys. Lett., **378**, 330–336 (2003).
Authors: F. J. Gálvez, E. Buendía and A. Sarsa.

35. *Neutron matter at zero temperature with an auxiliary field diffusion Monte Carlo method*
Phys. Rev. C, **68**, 024308 (2003).
Authors: A. Sarsa, S. Fantoni, K. E. Schmidt and F. Pederiva.

36. *Spin-orbit induced backflow in neutron matter with auxiliary field diffusion Monte Carlo method*
Phys. Rev. C, **67**, 065806 (2003).
Authors: L. Brualla, S. Fantoni, A. Sarsa, K. E. Schmidt and S. A. Vitiello

37. *Structure, rotational dynamics, and superfluidity of small OCS-doped He clusters*
Phys. Rev. Lett., **90**, 143401 (2003).
Authors: S. Moroni, A. Sarsa, S. Fantoni, K. E. Schmidt and S. Baroni

38. *Simple correlated wave functions for the ground and some excited states of sd shell nuclei*
Phys. Rev. C, **67**, 044301 (2003).
Authors: J. Praena, E. Buendía, F.J. Gálvez, and A. Sarsa

39. *Excited states of beryllium isoelectronic series from explicitly correlated wave functions*
Journal of Chemical Physics, **118**, 6858 (2003).
Authors: F.J. Gálvez, E. Buendía and A. Sarsa

40. *Electron pair properties for the helium atom from explicitly correlated wave functions*
Chemical Physics Letters, **370**, 327 (2003).
Authors: F.J. Gálvez, E. Buendía and A. Sarsa

41. *Margenau-Brink alpha model with central Jastrow and linear state-dependent correlations for p-shell nuclei*
Nuclear Physics A **710**, 29 (2002).
Authors: E. Buendía, F.J. Gálvez, J. Praena and A. Sarsa

42. *Excited states of beryllium atom from explicitly correlated wave functions*
Journal of Chemical Physics, **117**, 6071 (2002).
Authors: F.J. Gálvez, E. Buendía and A. Sarsa

43. *Number-conserving model for boson pairing*
Phys. Rev. A, **66**, 033604-1 – 033604-17 (2002)
Authors: S. Fantoni, T. M. Nguyen, S. R. Shenoy and A. Sarsa

44. *Reply to comment on "Correlated one-body momentum density for helium to neon atoms"*
Journal of Physics B: At. Mol. Opt. Phys. **35**, 2191 (2002).
Authors: F. J. Gálvez, E. Buendía and A. Sarsa.

45. *Quadratic diffusion Monte Carlo and pure estimators for atoms.*
Journal of Chemical Physics, **116**, 5956 (2002).
Authors: A. Sarsa, J. Boronat and J. Casulleras

46. *Variational Monte Carlo calculations for some cations and anions of the first row atoms using explicitly correlated wave functions*
International Journal of Quantum Chemistry **87**, 270 (2002).
Authors: F. J. Gálvez, E. Buendía and A. Sarsa.

47. *HF dimer in small helium clusters: Interchange tunneling dynamics in a quantum environment*
Physical Review Letters, **88**, 123401-1 – 123401-4 (2002).
Authors: A. Sarsa, Z. Bačić, J. W. Moskowitz and K. E. Schmidt

48. *Spin susceptibility of neutron matter at zero temperature.*
Physical Review Letters, **87**, 181101-1 – 181101-4 (2001).
Authors: S. Fantoni, A. Sarsa and K. E. Schmidt

49. *Projected-deformed wave function with central Jastrow and Linear state-dependent correlations for ^8Be and ^{12}C nuclei*

Journal of Physics G: Nucl. Part. Phys., **27**, 2211 – 2223 (2001).
Authors: E. Buendía, F. J. Gálvez, J. Praena and A. Sarsa

50. *Atomic properties from energy-optimized wave functions.*
Journal of Chemical Physics, **115**, 1166 (2001)
Authors: F. J. Gálvez, E. Buendía and A. Sarsa

51. *Relative stabilities of the two isomers of the methanol-water dimer:*
The effects of the internal rotations of the hydroxyl and methyl groups
of methanol.
Journal of Chemical Physics, **114**, 10294 (2001)
Authors: J. W. Moskowitz, Z. Bačić, A. Sarsa and K. E. Schmidt

52. *A constrained path Monte Carlo method for nucleon systems.*
Int. J. Mod. Phys. B **15**, 1510 – 1518 (2001)
Authors: K. E. Schmidt, A. Sarsa and S. Fantoni

53. *Simple analysis of correlation in few-body Coulombic systems: Appli-*
cation in the diffusion Monte Carlo method.
Physical Review A, **63**, 022501-1 (2001)
Authors: C. Le Sech and A. Sarsa.

54. *Variational calculation of some S–states of Coulomb three body systems.*
European Physical Journal D., **13**, 201 (2001)
Authors: F. Arias de Saavedra, E. Buendía, F. J. Gálvez and A. Sarsa.

55. *Central Jastrow and Linear state-dependent correlations in nuclei.*
Journal of Physics G: Nucl. Part. Phys., **26**, 1795 – 1807 (2000).
Authors: E. Buendía, F. J. Gálvez, J. Praena and A. Sarsa.

56. *Momentum space densities for the beryllium isoelectronic series.*
Journal of Chemical Physics, **113**, 8631 – 8636 (2000).
Authors: F. J. Gálvez, E. Buendía and A. Sarsa.

57. *Two body densities and effective potentials.*
International Journal of Quantum Chemistry, **79**, 75 – 81 (2000).
Authors: F. Arias de Saavedra, E. Buendía, F. J. Gálvez and A. Sarsa.

58. *A Path Integral Ground State method.*
    Journal of Chemical Physics, **113**, 1366 – 1371 (2000).
    Authors: A. Sarsa, K. E. Schmidt and W. Magro.

59. *A Monte Carlo model of the nocturnal surface temperatures in urban canyons.*
    Boundary-Layer Meteorology, **96**, 433 – 452 (2000).
    Authors: J. P. Montávez, J. I. Jiménez and A. Sarsa.

60. *Constraint Dynamics for Quantum Monte Carlo calculations.*
    Journal of Chemical Physics, **113**, 44 – 47 (2000).
    Authors: A. Sarsa, K. E. Schmidt and J. W. Moskowitz.

61. *A new Quantum Monte Carlo method for nucleon systems.*
    Progress in Particle and Nuclear Physics **44**, 63 (2000).
    Authors: S. Fantoni, A. Sarsa and K. E. Schmidt.

62. *Correlated one-electron and two-electron densities for the ground state of the lithium atom.*
    Physical Review A, **61** 052505-1 (2000).
    Authors: F. J. Gálvez, E. Buendía and A. Sarsa.

63. *One- and two- body densities for the beryllium isoelectronic series.*
    Journal of Chemical Physics **111**, 10903 (1999).
    Authors: F. J. Gálvez, E. Buendía and A. Sarsa.

64. *Variational Monte Carlo calculations of two body properties in atoms: Importance Sampling Considerations.*
    Computer Physics Communications Sp. Iss. **121-122**, 493 (1999).
    Authors: A. Sarsa, F. J. Gálvez and E. Buendía.

65. *Correlated electron extracule densities in postion and momentum spaces.*
    Journal of Chemical Physics **111**, 3319 (1999).
    Authors: F. J. Gálvez, E. Buendía and A. Sarsa.

66. *Correlated one-body momentum density for helium to neon atoms.*
    Journal of Physics B: At. Mol. Opt. Phys. **32**, 2245 (1999).
    Authors: A. Sarsa, F. J. Gálvez and E. Buendía.

67. *Correlated two-electron momentum properties for helium to neon atoms.*
Journal of Chemical Physics **110**, 5721 (1999).
Authors: A. Sarsa, F. J. Gálvez and E. Buendía.

68. *Correlated Monte Carlo electron pair density for the atoms helium to neon.*
Journal of Chemical Physics **109**, 7075 (1998).
Authors: A. Sarsa, F. J. Gálvez and E. Buendía.

69. *A Variational Monte Carlo study of the 2s-2p near degeneracy in beryllium, boron and carbon atoms.*
Journal of Chemical Physics **109**, 3346 (1998).
Authors: A. Sarsa, F. J. Gálvez and E. Buendía.

70. *Precise variational calculation of some S-states of Coulomb three-body systems with two identical particles.*
European Physical Journal D **2**, 181 (1998).
Authors: F. Arias de Saavedra, E. Buendía, F. J. Gálvez and A. Sarsa.

71. *Factored wave function for bound S-type states of two-electron atomic systems.*
International Journal of Quantum Chemistry **68**, 405 (1998).
Authors: E. Buendía, F. J. Gálvez and A. Sarsa.

72. *Hartree-Fock Wave Functions with a Modified GTO Basis for atoms.*
International Journal of Quantum Chemistry **65**, 59 (1997).
Authors: E. Buendía, F. J. Gálvez and A. Sarsa.

73. *Bound for the electron density at the nucleus and for the intracule density at the coalescence point for two electron atoms.*
Zeitschrift für Physik D **35**, 163 (1995).
Authors: F. J. Gálvez and A. Sarsa.

74. *Non-linear Characterizations for Functions of Hypergeometric Type and Their Derivatives of Any Order.*
Journal of Mathematical Analysis and Applications **184**, 35 (1994).
Authors: J. S. Dehesa, R. J. Yáñez, M. Pérez-Victoria and A. Sarsa.