

---

CURRICULUM VITAE  
JESÚS SÁNCHEZ-DEHESA MORENO-CID  
(Prof. Dr. J. S. Dehesa)  
November 28, 2019

---

## PERSONAL DATA

*Family Name:* SÁNCHEZ-DEHESA  
*First Name:* JESÚS  
*Born:* Manzaneque (Toledo, Spain), 21-9-1947  
*Marital Status:* Married, 24-9-1977 to Gloria. Two Children  
*Present Position:* Emeritus Professor (University of Granada).  
*Address:* Instituto “Carlos I” de Física Teórica y Computacional and Departamento de Física Atómica, Molecular y Nuclear. Facultad de Ciencias. Universidad de Granada. Campus de Fuentenueva. E-18071 Granada. Spain  
*Phone:* +34 958 243215 (office)  
*E-mail:* dehesa@ugr.es  
*ORCID:* K-8298-2014; 0000-0003-4397-9426

## EDUCATION

<i>Degree</i>	<i>Institution</i>	<i>Date</i>
B.Sc.	University of Madrid.	1969
Ph. D. (Physics)	University of Bonn (Germany). Thesis on Nuclear Giant Resonances under A. Faessler and J. Speth	1977
Ph. D. (Mathematics)	University of Zaragoza. Thesis on Zeros of Orthogonal Polynomials under L. Vigil	1978

## ACADEMIC POSITION

<i>Degree</i>	<i>Institution</i>	<i>Date</i>
Assistant	Autonomous University of Madrid	1970-71
Research Associate	Institute de Physique Nucleaire de Orsay, Paris, France	1971-72
Assistant	Autonomous University of Madrid	1972-74
Research Associate	Institut für Kernphysik der KFA Jülich, Germany	1974-77
Assistant Professor	University of Granada	1977-85
Professor	University of Granada	1985-2017
Emeritus Professor	University of Granada	2017-present

## PROFESSIONAL SOCIETIES

*Member of the following Societies:*

- European Physical Society
- American Physical Society
- Spanish Physical Society.
- American Mathematical Society
- Society for Industrial and Applied Mathematics (SIAM)
- Academia de Ciencias Exactas, Físico-Químicas y Naturales

## PH. D. ADVISEES

- **A.M. Lallena:** Graduated in 1984. Dissertation subject: "Influence of meson exchange currents in nuclear magnetic electron scattering"  
Present status: Professor in Physics
- **F.J. Gálvez:** Graduated in 1985. Dissertation subject: "Average properties of atomic and nuclear systems"  
Present status: Professor in Physics
- **J.C. Angulo:** Graduated in 1993. Dissertation subject: "Structural properties of atomic systems and monotonicity of the charge, momentum and electron-pair densities"  
Present status: Associate Professor in Physics
- **A. Zarzo:** Graduated in 1995. Dissertation subject: "Algebraic and spectral properties of the solutions of differential equations and quantum-mechanical applications"  
Present status: Associate Professor in Mathematics
- **R.J. Yáñez:** Graduated in 1996. Dissertation subject: "Orthogonal polynomials, information entropy and many-electron systems"  
Present status: Associate Professor in Applied Mathematics
- **E. Romera:** Graduated in 1997. Dissertation subject: "Study of the electronic densities of charge, momentum and pairs in atomic systems"  
Present status: Associate Professor in Physics

- **R. González Férrez:** Graduated in 2001. Dissertation subject: "Atomic spectroscopy in intense electric and magnetic fields"  
Present status: Associate Professor in Physics
- **P. López Artés:** Graduated in 2002. Dissertation subject: "Logarithmic potentials and information entropies of orthogonal polynomials".  
Coadvised with Prof. Andrei Martínez-Finkelshtein  
Present status: Associate Professor in Mathematics
- **P. Sánchez Moreno:** Graduated in 2008. Dissertation subject: "Information-theoretic measures of special functions and atoms in external electric fields". Coadvised with R. González Férrez and R.J. Yáñez  
Present status: Associate Professor in Applied Mathematics
- **S. López Rosa:** Graduated in 28 June 2010. Dissertation subject: "Information-theoretic measures of atomic and molecular systems". Coadvised with J.C. Angulo  
Present status: Assistant Professor in Physics
- **B. Olmos Sánchez:** Graduated in 22 March 2010. Dissertation subject: "Fisher information in quantum systems and collective Rydberg excitations of an atomic gas confined in ring lattice". Coadvised with R. González Férrez and I. Lesanovsky  
Present status: Lecturer at the University of Nottingham
- **D. Manzano Diosdado:** Graduated in 12 April 2010. Dissertation subject: "Information and entanglement measures of quantum systems with applications to atomic physics". Coadvised with A.R. Plastino  
Present status: Postdoctoral position at M.I.T. (USA)
- **P.A. Bouvrie Morales:** Graduated in 3 September 2013. Dissertation subject: "Atomic information-theoretic measures and quantum entanglement of many-particle systems". Coadvised with J. C. Angulo.  
Present status: Postdoctoral position at Centro Brasileiro de Pesquisas Físicas (Rio de Janeiro).
- **A. Guerrero Martínez:** Graduated in 18 December 2014. Dissertation subject: "Entropy and complexity measures of special functions and quantum systems". Coadvised with P. Sánchez-Moreno
- **Irene Valero Toranzo:** Graduated in 9 February 2018. Dissertation subject: "Entropy, complexity and entanglement of quantum systems".  
Present status: Profesor visitante en la Universidad Rey Juan Carlos.
- **David Puertas Centeno:** Graduated in 23 May 2018. Dissertation subject: "Complexity and entropic uncertainty measures of quantum systems".

## MASTER STUDENT ADVISEES

- 1.- **Enrique Ruiz Arriola (1985)**  
Semiclassical study of the energy-levels and wavefunction-nodes densities in quantum-mechanical systems  
Present status: Professor in Physics
- 2.- **M. Angustias Sánchez Buendía (1985)**  
Distribution of zeros for polynomial solutions of differential equations  
Present status: Assistant Professor in Informatics
- 3.- **Francisco Domínguez-Adame (1985)**  
Relativistic effects on the nodal properties of hydrogenic wavefunctions  
Present status: Professor in Physics
- 4.- **Juan Carlos Angulo Ibáñez (1989)**  
Atomic charge and momentum distributions: Bounds to the central density and the information entropy  
Present status: Associate Professor in Physics
- 5.- **Ignacio Porras Sanchez (1989)**  
Bounds to density functionals of D-dimensional multifermionic systems (coadvised with F.J. Gálvez)  
Present status: Associate Professor in Physics
- 6.- **Rafael J. Yáñez (1994)**  
Entropic properties of simple multidimensional quantum systems  
Present status: Associate Professor in Applied Mathematics
- 7.- **Elvira Romera (1995)**  
Bounds to the Weizsäcker functional of many-fermion systems  
Present status: Associate Professor in Physics
- 8.- **Rosario González-Férez (1998)**  
Effects of electric and magnetic fields in atomic transitions  
Present status: Associate Professor in Physics
- 9.- **Pablo Sánchez-Moreno (2005)**  
Information measures of special functions and quantum mechanical potentials  
Present status: Associate Professor in Applied Mathematics
- 10.- **Sheila Lopez Rosa (6 Septiembre 2007)**  
Information theory of hydrogenic systems. Spreading properties. Applications to Rydberg atoms.  
Present status: Assistant Professor in Applied Mathematics

- 11.- **Beatriz Olmos Sanchez (20 Septiembre 2007)**  
Information-theoretic measures of relativistic hydrogenic systems.  
Present status: Permanent position at the University of Nottingham
- 12.- **Daniel Manzano Diosdado (Diciembre 2007)**  
Relativistic Klein-Gordon charge effects by information-theoretic measures  
Present status: Postdoctoral position at M.I.T. (USA)
- 13.- **Ángel Guerrero Martínez (2010)**  
Information-theoretic properties of Jacobi polynomials.  
Cotutorised with P. Sánchez-Moreno
- 14.- **Peter Alexander Bouvrie Morales (2010)**  
Information-theoretic measures of Delta-type quantum potentials.  
Cotutorised with J. C. Angulo.  
Present status: Postdoctoral position at the CBPF, Rio de Janeiro (Brazil).
- 15.- **Irene Valero Toranzo (Julio 2013)**  
Non-linear Schrodinger equation and Rydberg atoms.  
Present status: FPU predoctoral fellow of FISYMAT program of UGR
- 16.- **David Puertas Centeno (Julio 2015)**  
Entropy and complexity properties of multidimensional fermionic systems.  
Present status: Ph.D. student of FISYMAT program of UGR.
- 17.- **Nahual Sobrino Coll (Julio 2017)**  
Medidas teórico-informacionales de sistemas cuánticos de alta dimensionalidad  
Present status: Ph.D. student of Ikerbasque program.

## TEACHING EXPERIENCE

- Lectures in atomic physics, molecular physics, nuclear physics, quantum mechanics, information theory, quantum information, differential equations and the theory of special functions.
- Practical seminars in classical mechanics, electrodynamics, quantum mechanics, atomic physics, nuclear physics, classical and quantum information theory and applied mathematics.
- Ph. D. courses in many-electron systems, giant resonances in nuclei, electromagnetic processes in nuclei, fermionic density functionals, quantum wave equations, orthogonal polynomials and special functions, information theory, physics of information, quantum information.

## CURRENT FIELDS OF INTEREST

- PHYSICS: Information theory of quantum-mechanical systems, Quantum information, Macroscopic properties of many-fermion systems, Density functional methods in one and many-electron systems, Uncertainty relationships, D-dimensional physics.
- MATHEMATICS: Special functions and orthogonal polynomials, constructive analysis, approximation theory, functional inequalities and its applications.

## REFeree WORK

- Physical Review Letters, Physical Review A, Nuclear Physics A, New Journal of Physics, Journal of Physics A and B, Molecular Physics, International Journal of Quantum Chemistry, Journal of Mathematical Physics, Letters of Mathematical Physics, Theoretical Chemistry Accounts, Frontiers in Chemistry, Journal of Molecular Structure, Physics Letters A, International Journal for Theoretical Physics, Journal of Approximation Theory, Journal of Computational and Applied Mathematics, Methods and Applications in Analysis, Annals of Numerical Mathematics, SIAM Journal on Mathematical Analysis, Rendiconti di Matematica, Collectanea Mathematica, Applied Mathematics Letters, Advances in Difference Equations, Information Sciences, Physica A, Applied Mathematics and Computation.

## RESEARCH FINANCES (1988-present)

- TITLE OF THE PROJECT: Nolinealidad y control e incertidumbre cuánticas.  
ORGANISM or ACTION: Ministerio de Industria, Economía y Competitividad. Proyecto de Excelencia con Ref. FIS2017-89340P.  
PERIOD: 01-01-2018 to 31-12-2020.  
PRINCIPAL INVESTIGATOR: Rosario Gonzalez Ferez.
- TITLE OF THE PROJECT: Teoría de la aproximación, funciones especiales y modelos matemáticos: de la teora a las aplicaciones optamológicas.  
ORGANISM or ACTION: Junta de Andalucía. Proyecto de Excelencia con Ref. P11-FQM7276.  
PERIOD: 30-04-2013 to 29-04-2018  
PRINCIPAL INVESTIGATOR: Andrei Martinez-Finkelshtein.

- TITLE OF THE PROJECT: Información y complejidad en sistemas multi-electrónicos. Aplicaciones físicas, biotecnológicas y farmacológicas.  
 ORGANISM or ACTION: MINECO. Proyecto de Excelencia con Ref. FIS2014-59311-P  
 PERIOD: 01-01-2015 to 31-12-2018  
 PRINCIPAL INVESTIGATOR: Juan Carlos Angulo Ibáñez.
- TITLE OF THE PROJECT: Control de sistemas cuánticos.  
 ORGANISM or ACTION: Junta de Andalucía. Proyecto de Excelencia con Ref. FIS2014-54497-P  
 PERIOD: 01-01-2015 to 31-12-2018  
 PRINCIPAL INVESTIGATOR: Rosario Gonzalez Ferez.
- TITLE OF THE PROJECT: Física de la Información, sistemas ultrafríos y no-linealidad. Aplicaciones multidisciplinares.  
 ORGANISM or ACTION: Ministerio de Ciencia e Innovación (FIS2011-24540)  
 PERIOD: 2012-2015  
 PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa
- TITLE OF THE PROJECT: Orthogonality, approximation and quantum complexity: theory and scientific and technological applications.  
 ORGANISM or ACTION: Junta de Andalucía. Proyecto de Excelencia con Ref. FQM-4643  
 PERIOD: 2010 - 2014  
 PRINCIPAL INVESTIGATOR: Antonio Durán Guardado
- TITLE OF THE PROJECT: Quantum entropies  
 ORGANISM or ACTION: Junta de Andalucía. Proyecto de Excelencia con Ref. P06-FQM2445  
 PERIOD: 2008 - 2013  
 PRINCIPAL INVESTIGATOR: Vicerrector de Investigación (Jesús Sánchez-Dehesa)
- TITLE OF THE PROJECT: Atomic, molecular and nonlinear systems: spectroscopy, transport phenomena and information-theoretic measures  
 ORGANISM or ACTION: Ministerio de Ciencia e Innovación, with Ref. FIS2008-02380.  
 PERIOD: 2008 - 2011  
 PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa



- TITLE OF THE PROJECT: Spectroscopic and information-theoretic properties of atomic, molecular and nonlinear systems  
 ORGANISM or ACTION: Ministerio de Educación y Ciencia. FIS2005-00973.  
 PERIOD: 31 Diciembre 2005 - 14 October 2008  
 PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa
- TITLE OF THE PROJECT: Atomic and Molecular Physics  
 ORGANISM or ACTION: Junta de Andalucía  
 PERIOD:2006 - 2007  
 PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa
- TITLE OF THE PROJECT: Special functions, quantum entropies and bio- and nanotechnological applications  
 ORGANISM or ACTION: Junta de Andalucía (FQM-481)  
 PERIOD:2006 - 2008  
 PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa
- TITLE OF THE PROJECT: Acción Integrada Hispano-Alemana  
 ORGANISM or ACTION: Ministerio de Educación y Ciencia  
 PERIOD:2006 - 2007  
 PRINCIPAL INVESTIGATOR: Rosario González Férez y Peter Schmelcher
- TITLE OF THE PROJECT: Constructive Complex Approximation  
 ORGANISM or ACTION: INTAS-03-51-6637  
 PERIOD:30 January 2004 - 30 January 2007  
 PRINCIPAL INVESTIGATOR: Walter van Assche (University of Leuven, Belgium)
- TITLE OF THE PROJECT: Orthogonal Polynomials: Theory, Applications and Generalizations  
 ORGANISM or ACTION: NATO Science Programme, PST.CLG.929738  
 PERIOD:2003-2005  
 PRINCIPAL INVESTIGATOR: Jeffrey Gerónimo (Georgia Institute of Technology, USA)
- TITLE OF THE PROJECT: Funcionales de la Densidad de Sistemas Mecano-Cuánticos y Teoría de Funciones Especiales (BFM2001-3878-C02-01)  
 ORGANISM or ACTION: Ministerio de Ciencia y Tecnología  
 PERIOD:2002-2005  
 PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa

- TITLE OF THE PROJECT: Rational Approximation of Analytic Functions and its Applications to the Spectral Theory of Difference Operators, Non-linear Dynamical Systems, Special Functions and Number Theory (00-0272)

ORGANISM or ACTION: INTAS (Unión Europea)

PERIOD: 2001-2003

PRINCIPAL INVESTIGATOR: Walter van Assche (Universidad de Lovaina, Bélgica)
- TITLE OF THE PROJECT: Constructive Complex Analysis and Density Functionals

ORGANISM or ACTION: Unión Europea. Proyecto INTAS 93-219-EXT

PERIOD: 1997-1999

PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa
- TITLE OF THE PROJECT: Atoms in External Fields

ORGANISM or ACTION: Acción Integrada Hispano-Alemana

PERIOD: 1997-1999

PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa
- TITLE OF THE PROJECT: Funcionales de la Densidad de los Sistemas Fermiónicos

ORGANISM or ACTION: DGICYT. Proyecto PB95-1205

PERIOD: 1/11/1996-1/11/2001

PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa
- TITLE OF THE PROJECT: Estructura Atómica en el Espacio de Momento

ORGANISM or ACTION: Fundación BBV

PERIOD: 1998

PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa
- TITLE OF THE PROJECT: Física Atómica y Molecular

ORGANISM or ACTION: Junta de Andalucía

PERIOD: 1995-1997 y 1997-2001

PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa
- TITLE OF THE PROJECT: Constructive Complex Analysis and Density Functionals

ORGANISM or ACTION: Unión Europea. Proyecto INTAS 93-219

PERIOD: 1995-1997

PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa

- TITLE OF THE PROJECT: Dinámica de los Sistemas Fermiónicos  
ORGANISM or ACTION: DGICYT  
PERIOD: 26/05/1993-26/05/1996  
PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa
- TITLE OF THE PROJECT: Polinomios Ortogonales, Método de Lanczos y Física de Muchos Cuerpos  
ORGANISM or ACTION: Acción Integrada Hispano-Portuguesa  
PERIOD: 1990-1992  
PRINCIPAL INVESTIGATOR: Francisco Marcellán
- TITLE OF THE PROJECT: Dinámica de los Sistemas Fermiónicos  
ORGANISM or ACTION: DGICYT  
PERIOD: 1991-1993  
PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa
- TITLE OF THE PROJECT: Effective Low-Energy QCD-Theories  
ORGANISM or ACTION: Kernforschungszentrum Karlsruhe  
PERIOD: 1991-1993  
PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa
- TITLE OF THE PROJECT: Física Nuclear  
ORGANISM or ACTION: Junta de Andalucía  
PERIOD: 1991-1992  
PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa
- TITLE OF THE PROJECT: Física Nuclear  
ORGANISM or ACTION: Junta de Andalucía  
PERIOD: 1990-1991  
PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa
- TITLE OF THE PROJECT: Orthogonal Polynomials and Differential Equations. Theory and Applications  
ORGANISM or ACTION: N.A.T.O.  
PERIOD: 1988-1990  
PRINCIPAL INVESTIGATOR: Jesús Sánchez-Dehesa

## LIST OF PUBLICATIONS

### 1. 1976 - 1979

2. **J.S. Dehesa**  
*On the conditions for a Hamiltonian matrix to have an eigenvalue density with some prescribed characteristics*  
J. Computational & Applied Mathematics 2 (1976) 249-254
3. **J.S. Dehesa**  
*Microscopic Description of Giant Resonances in Closed-Shell Nuclei*  
Doctoral Dissertation in Physics (Univ. of Bonn, Germany, 1977)
4. **J.S. Dehesa**  
*The asymptotical spectrum of Jacobi matrices*  
J. Computational & Applied Mathematics 3 (1977) 167-175
5. **J.S. Dehesa, S. Krewald, J. Speth and A. Faessler**  
*Spreading widths of giant resonances in C-12 and O-16*  
Physical Review C15 (1977) 1858-1865
6. **J.S. Dehesa, J. Speth and A. Faessler**  
*Fine structure of the magnetic dipole states in Pb-208*  
Physical Review Letters 38 (1977) 208-211
7. **J.S. Dehesa**  
*Propiedades Asintóticas de Ceros de Polinomios Ortogonales y Autovalores de Matrices de Jacobi*  
Doctoral Dissertation in Mathematics (Univ. of Zaragoza, 1978)
8. **J.S. Dehesa**  
*The eigenvalue density of rational Jacobi matrices*  
J. Physics A: Mathematical & General 11 (1978) L223-226
9. **J.S. Dehesa**  
*The Lanczos method and the asymptotical level density of a physical system*  
Lettere Nuovo Cimento 23 (1978) 301-305
10. **J.S. Dehesa**  
*The spectrum of Jacobi matrices in terms of its associated weight function*  
J. Computational & Applied Mathematics 4 (1978) 275-283
11. **J.S. Dehesa**  
*Zeros of orthogonal polynomials in birth-death processes*  
Z. für Angewandte Mathematik und Mechanik 58 (1978) T397-400
12. **J.S. Dehesa, W.D. Lauppe, K. Sistemich and J. Speth**  
*Structure calculations for the doubly-magic nucleus Sn-132*  
Physics Letters B 74 (1978) 309-312

13. **J. Speth, J.S. Dehesa, A. Faessler, V.A. Madsen and J. Wambach**  
*Fragmentation of electric multipole strength in Pb-208*  
J. Phys. Soc. Japan Suppl. 44 (1978) 213-217
14. **G.E. Brown, J.S. Dehesa and J. Speth**  
*A dynamical theory of the giant dipole resonances in nuclei*  
Nuclear Physics A 330 (1979) 290-306
15. **J.S. Dehesa**  
*On a general system of orthogonal q-polynomials*  
J. Computational & Applied Mathematics 5 (1979) 37-45
16. **J.S. Dehesa**  
*On a Szegő theorem of orthogonal polynomials*  
Rev. Matemática Hispano-Americana 39 (1979) 277-282
17. **J.S. Dehesa**  
*The asymptotic behavior of zeros of orthogonal polynomials*  
Lettere Nuovo Cimento 24 (1979) 151-157
18. **P. Nevai and J.S. Dehesa**  
*On asymptotic average properties of zeros of orthogonal polynomials*  
SIAM J. Mathematical Analysis 10 (1979) 1184-1192

#### 1980 - 1984

19. **J.S. Dehesa**  
*Giant multipole resonances in Pb-208*  
Anales de Física 76 (1980) 126-134
20. **J.S. Dehesa**  
*The eigenvalue density of rational Jacobi matrices (II)*  
Linear Algebra & Applications 33 (1980) 41-56
21. **J.S. Dehesa and R. Guardiola (editors)**  
*Nuclear Giant Resonances*  
Real Sociedad Española de Física, Madrid, 1980
22. **J.S. Dehesa and A.M. Lallena**  
*On the integrability of non-linear discrete systems*  
J. Physics A: Mathematical & General 13 (1980) L265-269
23. **J.S. Dehesa**  
*On orthogonal polynomials in transport theories*  
J. Physics A: Mathematical & General 14 (1981) 297-302
24. **J.S. Dehesa**  
*The Lanczos method, Jacobi matrices and physics*  
J. Computational & Applied Mathematics 7 (1981) 249-259

25. **J.S. Dehesa**  
*Characterization of non-lorentzian line shapes in atom-atom collisions*  
Nuovo Cimento D 1 (1982) 442-448
26. **J.S. Dehesa**  
*New properties of the spheroidal wave equation*  
Lettere Nuovo Cimento 35 (1982) 25-28
27. **J.S. Dehesa**  
*Orthogonal polynomials in neutron transport theories*  
J. Physics A: Mathematical & General 15 (1982) 327-330
28. **J.S. Dehesa, J.M.G. Gómez and J. Ros (editors)**  
*Interacting Bosons in Nuclei*  
Lecture Notes in Physics (Springer-Verlag, Heidelberg, 1982)
29. **J.S. Dehesa, R. Guardiola, A. Polls and J. Ros**  
*Monopole resonances and Jastrow correlations*  
Physics Letters B 118 (1982) 13-15
30. **S. Krewald and J.S. Dehesa**  
*Meson exchange current effects in heavy nuclei.*  
In R. Guardiola and A.Polls (editors), "Quarks, Mesons and Isobars in Nuclei"  
World Publishing Co., Singapore, (1983), pp. 266-277
31. **A. Lloris, A. Prieto and J.S. Dehesa**  
*Distribution of natural frequencies in electrical ladder networks*  
Proceedings of the IEEE 71 (1983) 773-775
32. **M.C. Boscá and J.S. Dehesa**  
*Rational Jacobi matrices and certain quantum mechanical problems*  
J. Physics A: Mathematical & General 17 (1984) 3487-3491
33. **E. Buendía, M.A. Sánchez-Buendía and J.S. Dehesa**  
*Sobre la caracterización de los polinomios ortogonales como soluciones de ecuaciones diferenciales ordinarias*  
Mathematical Contrib. in honor to L. Vigil (Univ. Zaragoza, 1984), 101-112
34. **J.S. Dehesa**  
*On Wigner 's semicircle law for eigenvalues of non-random hamiltonians*  
Physics Letters A 102 (1984) 283-
35. **J.S. Dehesa, J.M.G. Gómez and A. Polls (editors)**  
*Mathematical and Computational Methods in Nuclear Physics*  
Lecture Notes in Physics (Springer-Verlag, Heidelberg, 1984)

36. **F.J. Gálvez and J.S. Dehesa**  
*Some open problems of generalizad Bessel polynomials*  
 J. Physics A: Mathematical & General 17 (1984) 2759-2766
37. **A. Lallena, J.S. Dehesa and S. Krewald**  
*Meson exchange current effects in electroexcitation of magnetic states in closed shell nuclei*  
 Physics Letters B 146 (1984) 294-298

**1985 - 1989**

38. **E.Buendía, J.S.Dehesa and M.A. Sánchez-Buendía**  
*On the zeros of eigenfunctions of polynomial differential equations*  
 J. Mathematical Physics 26 (1985) 2729-2736
39. **J.S. Dehesa, E. Buendía and M.A. Sánchez-Buendía**  
*On the polynomial solutions of differential equations of fourth order*  
 J. Mathematical Physics 26 (1985) 1547-1552
40. **J.S. Dehesa and F.J. Gálvez**  
*A lower bound for the nuclear kinetic energy*  
 Physics Letters B 156 (1985) 287-290
41. **J.S. Dehesa and F.J. Gálvez**  
*Quantum systems with uniform and regular level energy behaviors*  
 Physical Review A 32 (1985) 625-
42. **J.S. Dehesa and R. Guardiola (editors)**  
*Condensed Matter Theories*  
 Real Sociedad Española de Física, Madrid, 1985
43. **J.S. Dehesa, S. Krewald, A.M. Lallena and T.W. Donnelly**  
*Meson exchange currents in heavy nuclei*  
 Nuclear Physics A 436 (1985) 573-592
44. **J.S. Dehesa, A.M. Lallena and S. Krewald**  
*Inelastic magnetic electron scattering from closed shell nuclei*  
 Anales de Física 81 (1985) 169-180
45. **J.S. Dehesa, A.M. Lallena and S. Krewald**  
*M.E C. and 2p-2h effects in inelastic magnetic electron scattering from heavy nuclei*  
 in A. Boffi, A. Cioffi degli Atti and M. Giannini (ed.) "Perspectives in Nuclear Physics at Intermediate Energies" (World Publishing Co., Singapore, 1985)
46. **F.J. Galvez and J.S. Dehesa**  
*Bounds to the extreme eigenvalues of the Lanczos Hamiltonian of a quantum system*  
 J. Physics A: Mathematical & General 18 (1985) 2399-2402

47. **F. J. Gálvez and J.S. Dehesa**  
*Novel properties of Fibonacci and Lucas polynomials*  
 Math. Proceed. of the Cambridge Phil. Soc. 97 (1985) 159-164
48. **J.S. Dehesa and A.M. Lallena**  
*Pionic and 2p-2h effects on the form factor of the process  $(e, e')^{48}\text{Ca}(1^+; 10.23\text{MeV})$*   
 Physics Letters B 176 (1986) 9-13
49. **F.J.Gálvez and J.S.Dehesa**  
*Quantum systems with a common density of levels*  
 Physics Letters A 113 (1986) 454-458
50. **S. Krewald, A.M. Lallena and J.S. Dehesa**  
*Particle-vibration coupling and exchange-current effects in magnetic electron scattering form factor*  
 Nuclear Physics A 448 (1986) 685-706
51. **A.M. Lallena, J.S. Dehesa and S. Krewald**  
*Nuclear macroscopic properties and pionic exchange currents in  $(e, e')$  processes*  
 Physics Review C 34 (1986) 332-335
52. **J.S. Dehesa and F.J. Gálvez**  
*Level density of physical systems with Lanczos-type hamiltonians*  
 Physical Review A 36 (1987) 933-936
53. **J.S. Dehesa and F.J. Gálvez**  
*Quantum systems with a common density of levels (II)*  
 Physics Letters A 122 (1987) 385-388
54. **F.J. Gálvez and J.S. Dehesa**  
*Bounds for kinetic and exchange energies of fermion systems*  
 Physical Review A 35 (1987) 2384-2388
55. **F.J. Gálvez and J.S. Dehesa**  
*On two sets of orthogonal polynomial systems encountered in non-linear physics*  
 J. Physics A: Mathematical & General 20 (1987) 5489-5495
56. **M. Alfaro, J.S. Dehesa, F.J. Marcellán, J.L. Rubio and J. Vinuesa (editors)**  
*Orthogonal Polynomials and their Applications*  
 Lecture Notes in Mathematics (Springer-Verlag) 1329 (1988) 1-340
57. **E. Buendía, J.S. Dehesa and F.J. Gálvez**  
*The distribution of zeros of polynomial eigenfunctions of ordinary differential operators of arbitrary order*  
 Lecture Notes in Mathematics, (Springer) 1329 (1988) 222-235



58. **J.S. Dehesa and F.J. Gálvez**  
*Rigorous bounds to density-dependent quantities of D-dimensional many fermion systems*  
 Physical Review A 37 (1988) 3634-3637
59. **F.J. Gálvez and J.S. Dehesa**  
*Lower bounds on the electronic charge and momentum densities of atomic systems at their origin*  
 Physical Review A 37 (1988) 3154-3157
60. **F.J. Gálvez, I. Porrás, J.C. Angulo and J.S. Dehesa**  
*Improved lower bounds for the atomic charge density at the nucleus*  
 J. Physics B: Atomic & Molecular 21 (1988) L271-274
61. **J.S. Dehesa, F.J. Gálvez and I. Porrás**  
*Bounds to density-dependent quantities of D-dimensional many-particle systems in position and momentum spaces. Applications to atomic systems*  
 Physical Review A 40 (1989) 35-40
62. **J.S. Dehesa, F.J. Gálvez and I. Porrás**  
*Rigorous bounds to the average electron radius and momentum densities for atomic systems*  
 Physical Review A 39 (1989) 494-500
63. **J.S. Dehesa and A. Zarzo**  
*Lanczos method and the density of states of many-body systems*  
 Europhysics Letters 8 (1989) 589-593
64. **E. Ruiz Arriola and J.S. Dehesa**  
*The distribution of zeros of spherical Bessel functions of large order*  
 Nuovo Cimento B 103 (1989) 611-616

### 1990 - 1994

65. **J.C. Angulo, J.S. Dehesa and F.J. Gálvez**  
*Atomic charge convexity and the electron density at the nucleus*  
 Physical Review A 42 (1990) 641-644. Erratum PRA 43 (1991) 4069.
66. **F.J. Marcellán, J.S. Dehesa and A. Ronveaux**  
*Orthogonal polynomials with perturbed recurrence relations*  
 J. Computational & Applied Mathematics 30 (1990) 203-212
67. **A. Zarzo, J.S. Dehesa and A. Ronveaux**  
*Newton sum rule of zeros of semiclassical orthogonal polynomials*  
 J. Computational & Applied Mathematics 33 (1990) 85-96
68. **J.C. Angulo and J.S. Dehesa**  
*Atomic charge log-convexity and radial expectation values*  
 J. Physics B: Atomic and Molecular 24 (1991) L299-306

69. **J.C. Angulo and J.S. Dehesa**  
*Atomic systems with a completely monotonic electron density*  
 Physical Review A 44 (1991) 1516-1522
70. **J.C. Angulo, J.S. Dehesa and F.J. Gálvez**  
*New bounds for the atomic charge and momentum densities at the origin*  
 Z. für Physik D.-Atoms, Molecules & Clusters 18 (1991) 127-130
71. **J.S. Dehesa, F.D. Adame E.R. Arriola and A. Zarzo**  
*Hydrogen atom and orthogonal polynomials*  
 in C. Brezinski, L. Gori and A. Ronveaux (Eds.) "Orthogonal Polynomials and their Applications", (Baltzer, Basel, 1991), pp. 223-229.
72. **J.S. Dehesa and A. Zarzo**  
*Determinación analítica de sumas finitas e infinitas de funciones especiales*  
 in L. Arias et al (ed.) "Simposium Español sobre Polinomios Ortogonales" (ETS Ing. Indust., Gijón, 1991), pp.1-20
73. **E. Ruiz Arriola, J.S. Dehesa and A. Zarzo**  
*Spectral properties of biconfluent Heun differential equation*  
 J. Computational & Applied Mathematics 37 (1991) 161-170
74. **A. Zarzo and J.S. Dehesa**  
*Estudio de la densidad de ceros de polinomios ortogonales mediante MATHEMATICA*  
 in L. Arias et al (ETS Ing. Indust., Gijón, 1991), pp.
75. **J.C. Angulo and J.S. Dehesa**  
*Tight rigorous bounds of atomic information entropies*  
 J. Chemical Physics 97 (1992) 6485-6495. Erratum JCP 98(11) (1993) 1.
76. **J.S. Dehesa, J.C. Angulo and T. Koga**  
*The electron-pair density of atomic systems: rigorous bounds and applications to He*  
 Z. Physik D.-Atoms, Molecules & Clusters 25 (1992) 3-8
77. **J.S. Dehesa, J.C. Angulo, T. Koga and K. Matsui**  
*Study of some interelectronic properties of He-like atoms*  
 Z. Physics D.-Atoms, Molecules & Clusters 25 (1992) 9-16
78. **J.S. Dehesa and A. Zarzo**  
*Many-body systems, orthogonal polynomials and the Lauricella function  $F_D^5$*   
 Physicallia Magazine 14 (1992) 35-45
79. **J. C. Angulo and J. S. Dehesa**  
*Charge monotonicity of atomic systems and radial expectation values*  
 Z. Physik D.-Atoms, Molecules & Clusters 25 (1993) 287-293

80. **J.S. Dehesa (editor)**  
*Proceedings of the Seventh Symposium on Orthogonal Polynomials and Applications*  
 J. Computational & Applied Mathematics vol 48 and 49 (1993)
81. **J.S. Dehesa, J.C. Angulo, T. Koga and Y. Kasai**  
*Interelectronic moments of atomic systems*  
 Physical Review A 48 (1993) 832-835
82. **J. S. Dehesa, J. C. Angulo, T. Koga and K. Matsui**  
*Bounds to the central electron pair density with applications to two electron atoms*  
 Physical Review A 47 (1993) 5202-5205
83. **J.S. Dehesa, R.J. Yáñez, A. Zarzo and J.A. Aguilar**  
*New linear relationships of hypergeometric-type functions with applications to orthogonal polynomials*  
 Rendiconti di Matematica (Roma) 13 (1993)661-671
84. **T. Koga, Y. Kasai, J.C. Angulo and J.S. Dehesa**  
*Electron-pair log-convexity and interelectronic moments in atoms and molecules*  
 Physical Review A 48 (1993) 2457-2460
85. **A.I. Aptekarev, V. Buyarov and J.S. Dehesa**  
*Asymptotic behavior of  $L_p$ -norms and entropy for orthogonal polynomials*  
 Russian Acad. of Sci. Sbornik Math. 185(8) (1994) 3-30; English translation 82(2) (1995) 373-395
86. **A.I. Aptekarev, J.S. Dehesa and R.J. Yáñez**  
*Spatial entropy of central potentials and strong asymptotics of orthogonal polynomials*  
 J. Mathematical Physics 35(9) (1994) 4423-4428
87. **J.S. Dehesa, J.C. Angulo, T. Koga and Y. Kasai**  
*Bounds to some local electron-pair properties with application to two-electron ions*  
 Physical Review A 50 (1994) 857-860
88. **J.S. Dehesa, T. Koga and E. Romera**  
*Atomic-charge monotonicity and cusp-type inequalities: Applications to He-like systems*  
 Physical Review A 49 (1994) 4225-4228
89. **J.S. Dehesa and R.J. Yáñez**  
*Fundamental recurrence relation of functions of hypergeometric type and their derivatives of any order*  
 Nuovo Cimento 109(7) (1994) 711-723

90. **J.S. Dehesa, R.J. Yáñez, M. Pérez-Victoria and A. Sarsa**  
*Non-linear characterizations for functions of hypergeometric type and their derivatives of any order*  
 J. Mathematical Analysis & Applications 184 (1994) 35-43
91. **J.S. Dehesa, A. Zarzo, R.J. Yáñez, B. Germano and P.E. Ricci**  
*Orthogonal polynomials and differential equations in neutron-transport and radiative transfer theories*  
 J. Computational & Applied Mathematics 50 (1994) 197-206
92. **T. Koga, J.C. Angulo and J.S. Dehesa**  
*Electron-electron coalescence and interelectronic log-moments in atomic and molecular systems*  
 Proceed. Indian Acad. Sciences (Chem. Sci.) 106(2) (1994) 123-131
93. **E. Romera and J.S. Dehesa**  
*The Weizsäcker energy of many electron systems*  
 Physical Review A50 (1994) 256-266
94. **R.J. Yáñez, J.S. Dehesa and A.F. Nikiforov**  
*The three-term recurrence relation and the differentiation formulas for hypergeometric polynomials*  
 J. Mathematical Analysis & Applications 188 (1994) 855-866
95. **R.J. Yáñez, J.S. Dehesa and A. Zarzo**  
*Four term recurrence relations of hypergeometric-type polynomials*  
 Nuovo Cimento 109(7) (1994) 725-733
96. **R.J. Yáñez, W. van Assche and J.S. Dehesa**  
*Position and momentum information entropies of the D-dimensional harmonic oscillator and hydrogen atoms*  
 Physical Review A 50(4) (1994) 3065-3079
97. **A. Zarzo and J.S. Dehesa**  
*Spectral properties of solutions of hypergeometric-type differential equations*  
 J. Computational & Applied Mathematics 50 (1994) 613-623

### 1995 - 1999

98. **E. Romera, J.S. Dehesa and R. J. Yáñez**  
*The Weizsäcker functional: some rigorous results*  
 Int. J. Quantum Chemistry 56 (1995) 627-632
99. **W. Van Assche, R.J. Yáñez and J.S. Dehesa**  
*Entropy of orthogonal polynomials with Freud weights and information entropies of the harmonic oscillator potential*  
 J. Mathematical Physics 36 (8) (1995) 1-13

100. **R.J. Yáñez, J.C. Angulo and J.S. Dehesa**  
*Information entropies of many-electron systems*  
Int. J. Quantum Chemistry 56 (1995)489-498
101. **A. Zarzo, J.S. Dehesa and J. Torres**  
*On a new set of polynomials representing the wavefunctions of the quantum relativistic harmonic oscillator*  
Annals of Numerical Mathematics 2 (1995) 439-455
102. **A. Zarzo, J.S. Dehesa and R.J. Yáñez**  
*Distribution of zeros of Gauss and Kummer hypergeometric functions. A semiclassical approach*  
Annals of Numerical Mathematics 2 (1995) 457-472
103. **A. Zarzo, R.J. Yáñez, A. Ronveaux and J.S. Dehesa**  
*Algebraic and spectral properties of some quasiorthogonal polynomials encountered in quantum radiation*  
J. Mathematical Physics 36(9) (1995) 5179-5197
104. **J.C. Angulo, R.J. Yáñez, J.S. Dehesa and E. Romera**  
*Monotonicity properties of the atomic charge density function*  
Int. J. Quantum Chemistry 8 (1996)11-21
105. **A.I. Aptekarev, V. Buyarov, W. Van Assche and J.S. Dehesa**  
*Asymptotics for entropy integrals of orthogonal polynomials*  
Doklady Akademii Nauk 346 (4) (1996) 439-441; English translation  
Russian Acad. Sci. DOKLADY Mathematics 53 (1996) 47-49
106. **J.S. Dehesa and A.F. Nikiforov**  
*The orthogonality properties of q-polynomials*  
Integral Transforms & Special Functions 4(4) (1996) 343-354
107. **R. Álvarez-Nodarse, E. Buendía and J.S. Dehesa**  
*The distribution of zeros of general q-polynomials*  
J. Physics A: Mathematical & General 30 (1997) 6743-6768
108. **J.S. Dehesa, W. Van Assche and R.J. Yáñez**  
*Information entropy of classical orthogonal polynomials and their application to the harmonic oscillator and Coulomb potentials*  
Methods & Applications in Analysis 4 (1997) 91-110
109. **E. Romera, J.S. Dehesa and T. Koga**  
*Analytical Schwartz density applied to heavy two-electron ions*  
Int. J. Quantum Chemistry 61 (1997) 525-531
110. **E. Romera, T. Koga and J.S. Dehesa**  
*Structure of the electron momentum density of atomic systems*  
Z. Physik D.-Atoms, Molecules & Clusters 42 (1997) 251-257

111. **R. Álvarez-Nodarse, R.J. Yáñez and J. S. Dehesa**  
*Modified Clebsch-Gordan-type expansions for products of discrete hypergeometric polynomials*  
J. Computational & Applied Mathematics 89(1) (1998) 171-197
112. **P.L. Artés, J.S. Dehesa, A. Martínez-Finkelshtein and J. Sánchez-Ruiz**  
*Linearization and connection coefficients for hypergeometric-type polynomials*  
J. Computational & Applied Mathematics 99 (1998) 15-26
113. **J.S. Dehesa, R.J. Yáñez, A.I. Aptekarev and V. Buyarov**  
*Strong asymptotics of Laguerre polynomials and information entropies of 2D harmonic oscillator and 1D Coulomb potentials*  
J. Mathematical Physics 39 (1998) 3050-3060
114. **T. Koga, H. Matsuyama, E. Romera and J.S. Dehesa**  
*Electron-pair center-of-mass-motion densities of atoms in position and momentum spaces*  
Physical Review A57 (1998) 4212-4218
115. **T. Koga, H. Matsuyama, E. Romera, J.S. Dehesa and A.J. Thakkar**  
*Electron momentum densities of atoms*  
J. Chemical Physics 109 (1998) 1601-1606
116. **H. Matsuyama, T. Koga, E. Romera and J.S. Dehesa**  
*Electron-pair relative-motion densities of atoms in position and momentum spaces*  
Physical Review A57 (1998) 1759-1766
117. **J. Sánchez-Ruiz and J.S. Dehesa**  
*Expansions in series of orthogonal hypergeometric polynomials*  
J. Computational & Applied Mathematics 89(1) (1998) 155-170
118. **V.S. Buyarov, J.S. Dehesa, A. Martínez-Finkelshtein and E.B. Saff**  
*Asymptotics of the information entropy for Jacobi and Laguerre polynomials with varying weights*  
J. Approximation Theory 99 (1999) 153-166
119. **T. Koga, H. Matsuyama, J.S. Dehesa and A.J. Thakkar**  
*Electron-pair densities of group 14, 15 and 16 Atoms in their low-lying multiplet states*  
J. Chemical Physics 110 (1999) 5763-5771
120. **T. Koga, H. Matsuyama, J. Molina and J.S. Dehesa**  
*Electron-pair densities of group-2 atoms in their  $^1P$  and  $^3P$  states*  
European J. Phys. D 7 (1999) 17-23

121. **T. Koga, H. Matsuyama, E. Romera, J.S. Dehesa and A.J. Thakkar**  
*Electron momentum densities of singly-charged ions*  
 Physics Review A 59(1999) 4805-4808
122. **T. Koga, E. Romera, J.S. Dehesa, H. Matsuyama and A.J. Thakkar**  
*Expansion coefficients and moments of electron momentum densities for singly-charged ions*  
 Theoretical Chemistry Accounts 103 (1999) 70-76
123. **E. Romera, J.C. Angulo and J.S. Dehesa**  
*Fisher entropy and uncertainty-like relationships in many-body systems*  
 Physical Review A 59(5) (1999) 5064-5067
124. **J. Sánchez-Ruiz, P.L. Artés, A. Martínez-Finkelshtein and J.S. Dehesa**  
*General linearization formulas for products of continuous hypergeometric-type polynomials*  
 J. Physics A 32 (1999) 7345-7366
125. **J. Sánchez-Ruiz, P.L. Artés, A. Martínez-Finkelshtein and J.S. Dehesa**  
*Linearization problems of hypergeometric polynomials in Quantum Physics,*  
*in*  
 G. Dattoli, H.M. Srivastava and D. Cocolicchio (editors), Proceed. of the Melfi Workshop on “Advanced Special Functions and Applications” (Aracne Editrice, Rome, 1999)
126. **R.J. Yáñez, W. van Assche, R.González-Férez and J.S. Dehesa**  
*Entropic integrals of hyperspherical harmonics and spatial entropy of D-dimensional central potentials*  
 J. Mathematical Physics 40 (1999) 5675-5686

### 2000 - 2004

127. **J.C. Angulo, T. Koga, E. Romera and J.S. Dehesa**  
*On the non-convexity of charge densities in atoms and ions*  
 Journal of Molecular Structure (Theochem) 501-502 (2000) 177-182
128. **J.C. Angulo, E. Romera and J.S. Dehesa**  
*Inverse atomic densities and inequalities among density functionals*  
 Journal of Mathematical Physics 41 (2000) 7906-7917

129. **E. Romera, T. Koga, J.C. Angulo and J.S. Dehesa**  
*Upper bounds to atomic electron densities in position and momentum spaces*  
 Journal of Mathematical Chemistry 28 (2000) 341-351
130. **J. Sánchez-Ruiz and J.S. Dehesa**  
*Entropic integrals of orthogonal hypergeometric polynomials with general supports*  
 Journal of Computational and Applied Mathematics 118 (2000) 311-322
131. **W. van Assche, R.J. Yáñez, R. González-Férez and J.S. Dehesa**  
*Functionals of Gegenbauer polynomials and D-dimensional hydrogenic momentum expectation values*  
 Journal of Mathematical Physics 41 (2000) 6600-6613
132. **E. Romera, J.C. Angulo and J.S. Dehesa**  
*The Hausdorff entropic moment problem*  
 Journal of Mathematical Physics 42(5) (2001) 2309-2314; erratum 44 (2003) 2354
133. **G. Carballo, R. Álvarez-Nodarse and J.S. Dehesa**  
*Chebyshev Polynomials in a Speech Recognition Model*  
 Applied Mathematics Letters 14 (2001) 581-585
134. **J.S. Dehesa, A. Martínez-Finkelshtein and J. Sánchez-Ruiz**  
*Quantum information entropies and orthogonal polynomials*  
 Journal of Computational and Applied Mathematics 133 (2001) 23-46
135. **J. Sánchez-Ruiz and J.S. Dehesa**  
*Some connection and linearization problems for polynomials in and beyond the Askey scheme*  
 Journal of Computational and Applied Mathematics 133 (2001) 579-591
136. **J.S. Dehesa, A. Martínez-Finkelshtein and V.N. Sorokin**  
*Short-wave asymptotics of the information entropy of a circular membrane*  
 Int. J. Bifurcation and Chaos 12(11) (2002) 2387-2392
137. **J.S. Dehesa, A. Martínez-Finkelshtein and V.N. Sorokin**  
*Quantum information entropies for highly-excited states of single-particle systems with power-type potentials*  
 Physical Review A 66 (2002) 062109-(1-11)



138. **R. Álvarez-Nodarse and J.S. Dehesa**  
*Distribution of zeros of discrete and continuous polynomials from their recurrence relation*  
 Applied Mathematics and Computation 128 (2002) 167-190
139. **J.S. Dehesa, A. Martínez-Finkelshtein and V.N. Sorokin**  
*Asymptotics of information entropies of some Toda-like potentials*  
 Journal of Mathematical Physics 44 (1) (2003) 36-47
140. **R. González-Férez and J.S. Dehesa**  
*Diamagnetic informational exchange of hydrogenic avoided crossings*  
 Chemical Physics Letters 373 (2003) 615-619
141. **J. Sánchez-Ruiz, P. López-Artés and J.S. Dehesa**  
*Expansions in series of varying Laguerre polynomials and some applications to molecular potentials*  
 Journal of Computational and Applied Mathematics **153** (2003) 411-421
142. **R. González-Férez and J.S. Dehesa**  
*Shannon entropy as indicator of atomic avoided crossing in strong fields*  
 Phys. Rev. Lett. 91(11) (2003) 113001-1
143. **E. Romera, J.C. Angulo and J.S. Dehesa**  
*Reconstruction of a density from its entropic moments*  
 Proceedings of the 21st Int. Workshop on “Bayesian Inference and Maximum Entropy Methods in Science and Engineering”, ISBN 0-7354-0063-6, Vol. 617, 449-457 (Ed. R. Fray, 2003)
144. **V. Buyarov, J.S. Dehesa, A. Martínez-Finkelshtein and J. Sánchez-Lara**  
*Computation of the entropy of orthogonal polynomials on an interval*  
 SIAM J. Scientific Computing 26(2) (2004) 488-509
145. **E. Romera and J.S. Dehesa**  
*The Fisher-Shannon information plane, an electron correlation tool*  
 J. Chemical Physics 120(19) (2004) 8906-8912

## 2005

146. **J.S. Dehesa, R.J. Yáñez, R. Álvarez-Nodarse and P. Sánchez-Moreno**  
*Information-theoretic measures of discrete orthogonal polynomials,*

in L. Allen, B. Aulbach, S. Elaydi and R. Sacker (eds.), Proceedings of the International Conf. on Difference Equations and Applications (Los Angeles, 2004), World Scientific, 2005, pag. 135-153

147. **J.S. Dehesa, S. López-Rosa, B.M. Olmos and R.J. Yáñez**  
*Information measures of hydrogenic systems, Laguerre polynomials and spherical harmonics*  
J. Comput. Appl. Math. 179 (2005) 185-194
148. **R. González-Férez and J.S. Dehesa**  
*Characterization of atomic avoided crossings by means of Fisher's information*  
European Phys. J. D 32 (2005) 39-43
149. **E. Romera, P. Sánchez-Moreno and J.S. Dehesa**  
*The Fisher information of single-particle systems with a central potential*  
Chemical Phys. Letters 414 (2005) 468-472
150. **J. Sánchez-Ruiz and J.S. Dehesa**  
*Fisher information of orthogonal hypergeometric polynomials*  
Journal of Computational and Applied Mathematics 182 (2005) 150-164

## 2006

151. **J.S. Dehesa**  
*Información, Mecánica Cuántica y Conciencia*  
Discurso de entrada en la Academia de Ciencias Matemáticas, Físico-Químicas y Naturales de Granada (2006)
152. **J.S. Dehesa, A. Martínez-Finkelshtein and V.N. Sorokin**  
*Information-theoretic measures for Morse and modified Pöschl-Teller potentials*  
Molecular Phys. 104(4) (2006) 613-622
153. **J.S. Dehesa, P. Sánchez-Moreno and R.J. Yáñez**  
*Cramer-Rao information plane of orthogonal hypergeometric polynomials*  
J. Computational and Applied Mathematics 186(2) (2006) 523-541
154. **J.S. Dehesa, S. López-Rosa, B. Olmos and R.J. Yáñez**  
*Fisher information of D-dimensional hydrogenic systems in position and momentum spaces*  
J. Mathematical Physics 47(5) (2006) 52104-1-13

155. **E. Romera, P. Sánchez-Moreno and J.S. Dehesa**  
*Uncertainty relation for Fisher information of D-dimensional single particle systems with central potentials*  
 J. Mathematical Physics 47(10) (2006) 103504-1-11
156. **P. Sánchez-Moreno, R. González-Férez and J.S. Dehesa**  
*Improvement of the Heisenberg and Fisher-information-based uncertainty relations for D-dimensional central potentials*  
 New Journal of Physics 8 (2006) 330

### 2007

157. **J.S. Dehesa, R. González-Férez and P. Sánchez-Moreno**  
*Fisher-information-based uncertainty relation, Cramer-Rao inequality and kinetic energy for the D-dimensional central problem*  
 J. Physics A: Math. Gen. 40 (2007) 1845-1856
158. **J.S. Dehesa, S. López-Rosa and R.J. Yáñez**  
*Information-theoretic measures of hyperspherical harmonics*  
 J. Mathematical Physics 48 (2007) 043503-(1-10)
159. **J.S. Dehesa, R. González-Férez, P. Sánchez-Moreno and R.J. Yáñez**  
*Kinetic energy bounds for particles confined in spherically-symmetric traps with nonstandard dimensions*  
 New J. Physics 9 (2007) 131-(1-18)
160. **A. Zarzo, R.J. Yáñez and J.S. Dehesa**  
*General recurrence and ladder relations of hypergeometric-type functions*  
 J. Comput. Appl. Math. 207 (2007) 166-179

### 2008

161. **J.S. Dehesa, B. Olmos and R.J. Yáñez**  
*Parameter-based Fisher's information of orthogonal polynomials*  
 J. Comput. Appl. Math. 214 (2008) 136-147
162. **J.S. Dehesa, P. Sánchez-Moreno, R.J. Yáñez and A. Zarzo**  
*Fisher information, special functions and second-order differential equations*  
 J. Mathematical Phys. 49 (2008) 082104-(1-16)

163. **S. López-Rosa, R.J. Yáñez, J.C. Angulo and J.S. Dehesa**  
*Existence conditions and spreading properties of extreme entropy D-dimensional distributions*  
Physica A 387 (2008) 2243-2255; Erratum, ibid 387 (2008) 4729-4730

## 2009

164. **P. Sánchez-Moreno, R.J. Yáñez and J.S. Dehesa**  
*Discrete densities and Fisher information*  
Proceedings of the 14th. ICDEA, Istanbul, 2008. (Ugur-Bahcesehir Univ. Publishing Co., Istanbul, 2009), pp. 285-292. ISBN 978-975-6437-80-3
165. **S. López-Rosa, D. Manzano and J.S. Dehesa**  
*Multidimensional hydrogenic complexity*  
In M. Asorey, J.V. Esteve, M.F. Rañada y J. Sesma (editors), *Mathematical Physics and Field Theory. Julio Abad in Memoriam*. ISBN 978-84-92774-04-3 (Prensas Universitarias de Zaragoza, 2009), pag. 267-276
166. **S. López-Rosa, J.C. Angulo and J.S. Dehesa**  
*Spreading measures of information-extremizer distributions: applications to atomic electron densities in position and momentum spaces*  
European Phys. J. D 51 (2009) 321-329
167. **A.I. Aptekarev, J.S. Dehesa, A. Martínez-Finkelshtein and R.J. Yáñez**  
*Discrete entropies of orthogonal polynomials*  
Constructive Approximation 30 (2009) 93-119
168. **R.O. Esquivel, N. Flores-Gallegos, E. Carrera, J.S. Dehesa, J.C. Angulo, J. Antolín and C. Soriano-Correa**  
*Theoretic-information entropies analysis of nanostructures: ab initio study of PAMAM precursors and dendrimers G0 to G3*  
Molecular Simulation 35(6) (2009) 498-511
169. **A.R. Plastino, D. Manzano and J.S. Dehesa**  
*Separability criterion for pure states of N identical fermions*  
Europhysics Letters 86(2) (2009) 20005
170. **S. López-Rosa, D. Manzano and J.S. Dehesa**  
*Complexity of D-dimensional hydrogenic systems in position and momentum spaces*  
Physica A 388 (2009) 3273-3281

171. **J.S. Dehesa, S. López-Rosa and D. Manzano**  
*Configuration complexities of hydrogenic atoms*  
 European Phys. J. D 55 (2009) 539-548
172. **R. González-Férez, J.S. Dehesa, S.H. Patil and K.D. Sen**  
*Scaling properties of composite information measures and shape complexity for hydrogenic atoms in parallel magnetic and electric fields*  
 Physica A 388 (2009) 4919-4925

## 2010

173. **A.I. Aptekarev, A. Martínez-Finkelshtein and J.S. Dehesa**  
*Asymptotics of orthogonal polynomials entropy*  
 J. Comp. Appl. Math. 233 (2010) 1355-1365
174. **J.S. Dehesa, S. López-Rosa, A. Martínez-Finkelshtein and R.J. Yáñez**  
*Information theory of D-dimensional hydrogenic systems: Applications to circular and Rydberg states*  
 Int. J. Quantum Chemistry 109 (2010) 1529-1548
175. **R.J. Yáñez, A.R. Plastino and J.S. Dehesa**  
*Quantum entanglement in a soluble two-electron model atom*  
 Eur. Phys. J. D 56 (2010) 141
176. **J.J. Omiste, R.J. Yáñez and J.S. Dehesa**  
*Information-theoretic properties of the half-line Coulomb potential*  
 J. Mathematical Chem. 47(3) (2010) 911
177. **J.S. Dehesa, D. Manzano and R.J. Yáñez**  
*Spreading lengths of Hermite polynomials*  
 J. Comput. Appl. Math. 233 (2010) 2136
178. **S. López-Rosa, R. Esquivel, J.C. Angulo, J. Antolín, J.S. Dehesa and N. Flores-Gallegos**  
*Fisher information study in position and momentum spaces for elementary chemical reactions*  
 J. Chemical Th. and Computation 6 (2010) 145
179. **D. Manzano, S. López-Rosa and J.S. Dehesa**  
*Relativistic Klein-Gordon charge effects by information-theoretic measures*  
 New Journal of Physics 12 (2010) 023014

180. **A.I. Aptekarev, J.S. Dehesa, A. Martínez-Finkelshtein and R.J. Yáñez**  
*Quantum expectation values of D-dimensional Rydberg states by use of Laguerre and Gegenbauer asymptotics*  
 J. Physics A 43 (2010) 145204
181. **R.O. Esquivel, J.S. Dehesa, J.C. Angulo, J. Antolín, N. Flores-Gallegos, S. López-Rosa and K.D. Sen**  
*Phenomenological description of a three-center insertion reaction: An information-theoretic study*  
 J. Phys. Chem. A 114 (2010) 1906
182. **D. Manzano, S. López-Rosa and J.S. Dehesa**  
*Complexity analysis of Klein-Gordon single-particle Coulomb systems*  
 Europhys. Lett. 90 (2010) 48001
183. **D. Manzano, A.R. Plastino, J.S. Dehesa and T. Koga**  
*Quantum entanglement in two-electron atomic models*  
 J. Phys. A 43 (2010) 275301
184. **R.O. Esquivel, J.C. Angulo, J. Antolín, J.S. Dehesa, S. López-Rosa and N. Flores-Gallegos**  
*Analysis of complexity measures and information planes of selected molecules in position and momentum spaces*  
 Phys. Chem. Chem. Phys. 12 (2010) 7108-7116
185. **A. Guerrero, P. Sánchez-Moreno and J.S. Dehesa**  
*Information-theoretic lengths of Jacobi polynomials*  
 J. Phys. A: Math. Theor. 43 (2010) 305203
186. **J.S. Dehesa, S. López-Rosa, A. Martínez-Finkelshtein and R.J. Yáñez**  
*Asymptotics of orthogonal-polynomial functionals and Shannon information entropy of Rydberg atoms*  
 Proceedings of ECMI (European Consortium for Mathematics in Industry) held at University College, London, 2008. In A.D. Fitt, J. Norbury, H. Ockendo and E. Wilson, editors, Progress in Industrial Mathematics 15, DOI 10.1007/978-3-642-12110-4-7. (Springer Verlag, Berlin, 2010).

## 2011

187. **P. Sánchez-Moreno, D. Manzano and J.S. Dehesa**  
*Direct spreading measures of Laguerre polynomials*  
 J. Comp. Appl. Math. 235 (2011) 1129-1140

188. **P. Sánchez-Moreno, J.J. Omiste and J.S. Dehesa**  
*Entropic functionals of Laguerre polynomials and complexity properties of the half-line Coulomb potential*  
 Int. J. Quantum Chem. 111 (2011) 2283
189. **P. A. Bouvrie, J. C. Angulo and J. S. Dehesa**  
*Entropy and complexity analysis of Dirac's delta-like quantum potentials*  
 Physica A 390 (2011) 2215-2228
190. **S. López-Rosa, P. Sánchez-Moreno, J. Venegas, J. Montero and J.S. Dehesa**  
*Position and momentum information-theoretic measures of a D-dimensional particle-in-a-box*  
 J. Math. Chem. 49 (2011) 971-994
191. **P. Sánchez-Moreno, A.R. Plastino and J.S. Dehesa**  
*A quantum uncertainty relation based on Fisher's information*  
 J. Phys. A: Math. Theor. 44 (2011) 065301
192. **P. Sánchez-Moreno, S. Zozor and J.S. Dehesa**  
*Upper bounds to the Shannon and Renyi entropies of central potentials*  
 J. Mathem. Phys. 52 (2011) 022105
193. **R. O. Esquivel, S. Liu, J. C. Angulo, J. S. Dehesa, J. Antolín and M. Molina-Espiritu**  
*Fisher information and steric effect: A study of the internal rotation barrier of ethane*  
 J. Phys. Chem. A 115 (2011) 4406-4415
194. **J.S. Dehesa, S. López-Rosa, and D. Manzano**  
*Entropy and complexity analyses of D-dimensional quantum systems*  
 In Statistical Complexity: Applications in Electronic Structure, edited by K.D. Sen (Springer Verlag, Berlin, 2011). pp. 129-166. ISBN 978-90-481-3889-0.
195. **S. Zozor, M. Portesi, P. Sánchez-Moreno, J. S. Dehesa**  
*The position-momentum uncertainty relation based on power moments with arbitrary orders*  
 Phys. Rev. A 83 (2011) 052107
196. **J.S. Dehesa, R.O. Esquivel, A.R. Plastino and P. Sanchez-Moreno**  
*The Fisher information: Properties and the steric effect*  
 J. Russian Laser Research 32 (5) (Sept. 2011) 403-411

197. **R. O. Esquivel, M. Molina-Espíritu, J. C. Angulo, J. Antolín, N. Flores-Gallegos and J. S. Dehesa**  
*Information-theoretical complexity for the hydrogenic abstraction reaction*  
 Molecular Physics 109 (2011) 2353-2365
198. **J.S. Dehesa, D. Manzano, P. Sánchez-Moreno and R.J. Yáñez**  
*Information theory of quantum systems with some hydrogenic applications*  
 Proceed. 30th. Int. Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering, held at Chamonix, France, July 4-9, 2010. Edited by A. Mohammad-Djafari et al (American Institute of Physics, New York, 2011)
199. **R. O. Esquivel, E.M. Carrera, C. Iuga, M. Molina-Espíritu, J. C. Angulo, J. S. Dehesa, S. López-Rosa, J. Antolin, N. Flores-Gallegos and C. Soriano**  
*Recent Advances Toward the Nascent Science of Quantum Information Chemistry*  
 Chapter 8 in Information Theory: New Research, Editores: P. Deloumeaux and Jose D. Gorzalka . Nova Science Publishers, 2011. ISBN: 978-1-62100-325-0
200. **R. O. Esquivel, A.L. Plastino, J. S. Dehesa, N. Flores-Gallegos, J. C. Angulo, J. Antolin and M. Molina-Espíritu**  
*Quantum entanglement and the dissociation process of diatomic molecules*  
 J. Phys. B: At. Mol. Opt. Phys. 44 (2011) 175101
201. **A. Guerrero, P. Sánchez-Moreno and J.S. Dehesa**  
*Upper bounds on uncertainty products and complexities of quantum systems*  
 Physical Review A 84 (2011) 042105

## 2012

202. **R. González-Férez, J.S. Dehesa and K.D. Sen**  
*Complexity analysis of the hydrogenic spectrum in strong fields*  
 P.E. Hoggan, E. J. Brandas, J. Maruani, P. Piecuch and G. Delgado-Barrio (editors), Advances in the Theory of Quantum Systems in Chemistry and Physics. Progress in Theoretical Chemistry and Physics B22 (2012)129-136, Springer. ISBN 978-94-007-2075-6
203. **R. O. Esquivel, J. C. Angulo, J.S. Dehesa, J. Antolín, S. López-Rosa, N. Flores-Gallegos, M. Molina-Espíritu, C. Iuga and E. Martínez-Carrera**



*Quantum Information-theoretical Analyses of Systems and Processes of Chemical and Nanotechnological Interest*

Chapter 12 of the book "Some Applications of Quantum Mechanics" edited by Mohammad Reza Pahlavani (InTech, 2012), ISBN 97895351-0059-1)

204. **P.A. Bouvrie, A.P. Majtey, A. R. Plastino, P. Sánchez-Moreno and J.S. Dehesa**  
*Quantum entanglement in exactly soluble atomic models: The Moshinsky model with three electrons and with two electrons in a uniform magnetic field*  
European Physical J. D 66(1) (2012) 15
205. **J.S. Dehesa, S. López-Rosa, P. Sánchez-Moreno and R. J. Yáñez**  
*Complexity of multidimensional hydrogenic systems*  
Int. J. Applied Math. & Statistics, Special Issue edited by R. Lopez-Ruiz et al (eds.). vol. 26 (2012) 150-162
206. **C. Vignat, A. Plastino, A. R. Plastino and J. S. Dehesa**  
*Quantum potentials with q-Gaussian ground states*  
Physica A 391 (2012) 1068-1073
207. **J.S. Dehesa, T. Koga, R.J. Yáñez, A.R. Plastino and R.O. Esquivel**  
*Quantum entanglement in Helium*  
J. Phys. B: At. Mol. Opt. Phys. 45 (2012) 015504
208. **J.S. Dehesa, P. Sánchez-Moreno and R.J. Yáñez**  
*Relative Fisher information of discrete classical orthogonal polynomials*  
J. Diff. Eq. Appl. 18 (3) (2012) 489-508
209. **A.I. Aptekarev, J.S. Dehesa, P. Sánchez-Moreno and D.N. Tulyakov**  
*Rényi entropy of the infinite well potential in momentum space and Dirichlet-like trigonometric functionals*  
J. Math. Chem. 50(5) (2012) 1079-1090
210. **J.S. Dehesa, P. Sánchez-Moreno, A.R. Plastino and C. Vignat**  
*Generalized Cramér-Rao relations for non-relativistic quantum systems*  
Applied Math. Lett. 25 (2012) 1689-1694
211. **P. Sánchez-Moreno, A. Zarzo and J. S. Dehesa**  
*Jensen divergence based on Fisher's information*  
J. Physics A: Math. Theor. 45 (2012) 125305 (14 pages)

212. **J. S. Dehesa, A. Guerrero and P. Sánchez-Moreno**  
*Information-theoretic-based spreading measures of orthogonal polynomials*  
 Complex Analysis and Operator Theory 6 (3) (2012) 585-601.
213. **A. P. Majtey, A. R. Plastino and J. S. Dehesa**  
*The relationship between entanglement, energy and level degeneracy in two-electrons systems*  
 J. Phys. A 45 (2012) 115309 (11 pags.)
214. **L. Rudnicki, P. Sánchez-Moreno and J.S. Dehesa**  
*The Shannon-entropy-based uncertainty relation for central potentials*  
 J. Phys. A: Math. Theor. 45 (2012) 225303 (11 pags.)
215. **R. O. Esquivel, M. Molina-Espíritu, J.S. Dehesa, J. C. Angulo and J. Antolín**  
*Concurrent phenomena at the transition region of selected elementary chemical reactions: An information-theoretical complexity analysis*  
 Intern. J. Quantum Chemistry 112 (2012) 3578-3586
216. **M. Molina-Espritu, R.O. Esquivel, J. C. Angulo, J. Antolin and J.S. Dehesa**  
*Information-theoretical complexity for the hydrogenic identity SN2 exchange reaction*  
 J. Math. Chemistry 50 (7) (2012) 1882-1900
217. **A. I. Aptekarev, J. S. Dehesa, P. Sánchez-Moreno and D. Tulyakov**  
*Asymptotics of  $L_p$ -norms of Hermite polynomials and Rényi entropy of Rydberg oscillator states*  
 Contemporary Mathematics 578 (2012) 19-29
218. **P.A. Bouvrie, S. Lopez-Rosa and J.S. Dehesa**  
*Dirac hydrogenic effects via Fisher-Shannon and LMC complexity measures*  
 Physical Review A86 (2012) 012507 (10 pages)
219. **R.J. Yáñez, G. Carballo and J.S. Dehesa**  
*Speech signals via information theory and Chebyshev polynomials.*  
 In P. Perner (ed.), Proceedings of the 7th. Int. Conference on Mass Data Analysis of Images and Signals with Applications in medicine, r/g/b Biotechnology, Food Industries and Dietetics, Biometry and Security, and Agriculture, MDA 2012. Berlin, 2012. ISBN 978-3-942952-15-6

## 2013

220. **S. López-Rosa, I.V. Toranzo, P. Sanchez-Moreno and J. S. Dehesa**  
*Entropy and complexity analysis of hydrogenic Rydberg atoms*  
 J. Math. Physics 54 (2013) 052109
221. **I.V. Toranzo, A.R. Plastino, J.S. Dehesa and A. Plastino**  
*Quasi-stationary states of the Nobre-Rego-Montero-Tsallis non-linear Schroedinger equation*  
 Physica A 392 (18) (2013) 3945-3951
222. **M. Molina-Espiritu, R.O. Esquivel, J.C. Angulo and J. S. Dehesa**  
*Concurrent phenomena at the reaction path of the SN2 reaction CH3CL + F-. Information planes and statistical complexity analysis*  
 Entropy 15 (2013) 4084-4104
223. **M. Molina-Espíritu, R. O. Esquivel and J. S. Dehesa**  
*Information-theoretical complexity analysis of selected elementary chemical reactions*  
 En R.G. Rubio, Yu. S. Ryazantsev, V.M. Starov, G.X. Huang, A.P. Chetverikov, A.A. Nepomnyaschchy, A. Ferrs and E.G. Morozov (editors). Without Bounds: A Scientific Canvas of Non-linearity and Complex Dynamics. Springer, Heidelberg, 2013.
224. **M. Molina-Espíritu, R. O. Esquivel, J.C. Angulo, J. Antolin, C. Iuga and J. S. Dehesa**  
*Information-theoretical analysis for the SN2 exchange reaction CH3CL + F-.*  
 Int. J. Quantum Chem. 113 (2013) 2589-2599
225. **P. Sanchez-Moreno, A. Zarzo, J.S. Dehesa and A. Guerrero**  
*Rényi entropy, Lp-norms and linearization of classical orthogonal polynomials*  
 Applied Math. Comput. 223 (2013) 25-33
226. **R. O. Esquivel, M. Molina-Espíritu, F. Salas, C. Soriano, C. Barrientos, J. S. Dehesa and J. A. Dobado**  
*Decoding the Building Blocks of Life From the Perspective of Quantum Information.*  
 In Advances in Quantum Mechanics, Prof. Paul Bracken (Ed.), ISBN: 978-953-51-1089-7, InTech, 2013. Available from: <http://www.intechopen.com/books/advances-in-quantum-mechanics/decoding-the-building-blocks-of-life-from-the-perspective-of-quantum-information>.

227. **J.S. Dehesa, R.O. Esquivel, A.R. Plastino and P. Sánchez-Moreno**  
*The Fisher information: Properties and applications to some physico-chemical processes*  
Chapter 9 of E-Book entitled Concepts and Recent Advances in Generalised Information Measures and Statistics, edited by A.M. Kowalski, R. Rossignoli and E.M.F. Curado. Bentham e-books. Bentham Science Publishers, 2013. DOI: 10.2174/97816080576031130101.

## 2014

228. **J.S. Dehesa, A. Guerrero, J.L. Lopez and P. Sanchez-Moreno**  
*Asymptotics ( $p \rightarrow \infty$ ) of  $L_p$  norms of hypergeometric orthogonal polynomials*  
J. Mathematical Chemistry 52 (2014) 283-300
229. **J.S. Dehesa, P. Sanchez-Moreno and I.V. Toranzo**  
*Frequency moments,  $L_q$  norms and Rényi entropies of general hypergeometric polynomials*  
J. Mathematical Chemistry 52 (2014) 1372-1385
230. **P. Sánchez-Moreno, J.C. Angulo and J.S. Dehesa**  
*A generalized complexity measure based on the Rényi entropy*  
European Phys. J. D 68 (2014) 212 (6 pages)
231. **M. Molina-Espíritu, R. O. Esquivel, J. C. Angulo, J. S. Dehesa, S. Lopez-Rosa and J. A. Dobado**  
*Insight into the informational-structure behavior of the Diels-Alder reaction of cyclopentadiene and maleic anhydride*  
J. Molecular Modelling 20 (8) (2014) 2361
232. **C.L. Benavides-Riveros, I.V. Toranzo and J.S. Dehesa**  
*Entanglement in  $N$ -harmonium: bosons and fermions*  
J. Phys. B: At. Mol. Opt. Phys. 47 (2014) 195503 (14pp).
233. **P.A. Bouvrie, A.P. Majtey, M.C. Tichy, J.S. Dehesa, A.R. Plastino**  
*Entanglement and the Born-Oppenheimer approximation in an exactly solvable quantum many-body systems*  
European Physical J. D 68 (2014) 346
234. **I.V. Toranzo, P. Sanchez-Moreno, R. O. Esquivel and J. S. Dehesa**  
*Pauli effects in uncertainty relations*  
Chem. Phys. Lett. 614 (2014) 1-4.

235. **I.V. Toranzo and J.S. Dehesa**

*Entropy and complexity properties of the d-dimensional blackbody radiation*

European Physical J. D 68 (2014) 316 (8pp)

## 2015

236. **J.S. Dehesa, A. Guerrero and P. Sanchez-Moreno**

*Entropy and complexity analysis of the D-dimensional rigid rotator and hyperspherical harmonics*

J. Mathem. Chemistry 53 (2015) 573-589

237. **J.S. Dehesa, A. Guerrero and P. Sanchez-Moreno**

*Complexity analysis of hypergeometric orthogonal polynomials*

J. Comput. Appl. Mathem. 284 (2015) 144-154. See <http://dx.doi.org/10.1016/j.cam.2014.08.013>.

238. **R. O. Esquivel, M. Molina-Espíritu, A. R. Plastino and J. S. Dehesa**

*Quantum entanglement of selected chemical reactions*

Int. J. Quantum Chem. 115 (2015) 1417-1430.

239. **I.V. Toranzo, S. López-Rosa, R. O. Esquivel and J. S. Dehesa**

*Heisenberg-like and Fisher-information-based uncertainty relations for N-electron d-dimensional systems*

Phys. Rev. A 91 (2015) 062122 (8 pages)

240. **M. Molina-Espíritu, S. López-Rosa, R. O. Esquivel and J. S. Dehesa**

*Quantum entanglement and chemical reactivity*

J. Chemical Theory and Comput. 11 (11) (2015) 5144 - 5151

241. **R. O. Esquivel, S. López-Rosa and J. S. Dehesa**

*Correlation energy as a measure of non locality: Quantum entanglement of helium-like systems*

EPL (Eur. Phys. Lett.) 111 (2015) 40009

242. **S. López-Rosa, R. O. Esquivel, A. R. Plastino and J. S. Dehesa**

*Quantum entanglement of helium-like systems with varying-Z : compact state-of-the-art CI wave functions*

J. Phys. B: Atomic, Molecular and Optics 48 (2015) 175002.

243. **R. O. Esquivel, M. Molina-Espritu, S. López-Rosa, C. Soriano-Correa, C. Barrientos, M. Kohout and J. S. Dehesa**  
*Predominant information quality scheme for the essential amino acids: An information-theoretical analysis*  
 ChemPhysChem 16 (2015) 2571-2581.
244. **I.V. Toranzo, A.R. Plastino, P. Sánchez-Moreno and J.S. Dehesa**  
*Quantum entanglement in  $(d - 1)$ -dimensional spherium*  
 J. Phys. A: Math. Theor. 48 (2015) 475302 (23pp)

### 2016

245. **I.V. Toranzo, S. López-Rosa, R. O. Esquivel and J. S. Dehesa**  
*Extremum-entropy-based Heisenberg-like uncertainty relations*  
 J. Phys. A: Math. Theor. 49 (2016) 025301 (13pp)
246. **L. Rudnicki, I.V. Toranzo, P. Sánchez-Moreno and J.S. Dehesa**  
*Monotones of statistical complexity measures*  
 Phys. Lett. A 380 (2016) 377-380
247. **A.I. Aptekarev, D.N. Tulyakov, I.V. Toranzo and J. S. Dehesa**  
*Rényi entropies of the highly-excited states of multidimensional harmonic oscillators by use of strong Laguerre asymptotics*  
 European Phys. J. B 89 (2016) 85 (12 pages)
248. **I.V. Toranzo and J. S. Dehesa**  
*Rényi, Shannon and Tsallis entropies of Rydberg hydrogenic systems*  
 EPL(Europhys. Letters) 113 (2016) 48003
249. **I.V. Toranzo, D. Puertas-Centeno and J. S. Dehesa**  
*Entropic properties of  $D$ -dimensional Rydberg systems*  
 Physica A: Statistical Mechanics and its Applications 462 (2016) 1197-1206.
250. **I.V. Toranzo, A. Martnez-Finkelshtein and J. S. Dehesa**  
*Heisenberg-like uncertainty measures for  $D$ -dimensional hydrogenic systems at large  $D$*   
 J. Math. Phys. 57 (2016) 082109-1-21
251. **R.O. Esquivel, S. López-Rosa, M. Molina-Espíritu, C. Soriano-Correa, J.C. Angulo and J.S. Dehesa**  
*Information-Theoretic Representation of the Chemical Space of Many Electron Systems*  
 Frontiers of Computational Chemistry 3 (2016) 310-353

252. **R. O. Esquivel, S. López-Rosa, M. Molina-Espíritu, J.C. Angulo and J.S. Dehesa**  
*Information-theoretical space from simple atomic and molecular systems to biological and pharmacological molecules*  
Theoretical Chemistry Accounts 135 (2016) 253
253. **R.O. Esquivel, S. López-Rosa, M. Molina-Espíritu, C. Soriano-Correa and J.S. Dehesa**  
*Study of the chemical space of selected bacteriostatic sulfonamides from an information-theoretical point of view*  
ChemPhysChem 17(23)(2016) 4003-40010

## 2017

254. **J. S. Dehesa, I.V. Toranzo and D. Puertas-Centeno**  
*Entropic measures of Rydberg-like harmonic systems*  
Int. J. Quantum Chemistry 117 (2017) 48-56
255. **I.V. Toranzo, P. Sánchez-Moreno, Ł. Rudnicki and J.S. Dehesa**  
*One-parameter Fisher-Rényi complexity: Notion and hydrogenic applications*  
Entropy 19 (2017) 16-1-15; DOI:10.3390/e19010016
256. **D. Puertas-Centeno, I.V. Toranzo and J. S. Dehesa**  
*The biparametric Fisher-Rényi complexity measure and its application to the multidimensional blackbody radiation*  
J. Statistical Mechanics 1704(4) (2017) 043408
257. **N. M. Temme, I.V. Toranzo and J. S. Dehesa**  
*Entropic functionals of Laguerre and Gegenbauer polynomials with large parameters.*  
J. Physics A: Theor. Math. 50 (2017) 215206.
258. **I.V. Toranzo, D. Puertas-Centeno and J.S. Dehesa**  
*Heisenberg and entropic uncertainty measures for high-dimensional harmonic systems*  
Entropy 19 (2017) 164-1-19. Special Issue about Foundations of Quantum Mechanics.
259. **D. Puertas-Centeno, I.V. Toranzo and J. S. Dehesa**  
*Biparametric complexities and the generalized Planck radiation law*  
J. Physics A: Theor. Math. 50 (2017) 505001

260. **I.V. Toranzo, N. Temme, D. Puertas-Centeno and J. S. Dehesa**  
*Heisenberg and entropic uncertainty measures for large-dimensional hydrogenic systems*  
 J. Mathematical Physics 58 (2017) 103302-1-17.
261. **N. Sobrino-Coll, D. Puertas-Centeno, I.V. Toranzo and J. S. Dehesa**  
*Complexity and uncertainty relations of multidimensional hydrogenic and harmonic systems*  
 J. Statistical Mechanics (2017) 083102.
262. **S. Zozor, D. Puertas-Centeno and J. S. Dehesa**  
*On generalized Stam's inequalities and Fisher-Rényi complexities*  
 Entropy 19 (2017) 493-1-31.
263. **S. Lopez-Rosa, I.V. Toranzo, P. Sanchez-Moreno and J. S. Dehesa**  
*Response to Comment on Entropy and complexity analysis of hydrogenic Rydberg atoms*  
 J. Mathematical Physics 58 (2017) 104102.

## 2018

264. **D. Puertas-Centeno, I.V. Toranzo and J. S. Dehesa**  
*Exact Rényi entropies of d-dimensional harmonic systems*  
 European J. Phys. Special Topics 227 (2018) 345-352. Doi.org/10.1140/epjst/e2018-00092-4.
265. **I.V. Toranzo, D. Puertas-Centeno and J. S. Dehesa**  
*Rényi entropies of the multidimensional hydrogenic states in position and momentum spaces*  
 J. Stat. Mech. 2018 (2018) 073203
266. **J.S. Dehesa, J.J. Moreno-Balcázar and I.V. Toranzo**  
*Linearization and Krein-like functionals of hypergeometric orthogonal polynomials*  
 J. Mathematical Physics 59 (12) (2018) 123504.

## 2019

267. **I.V. Toranzo and J. S. Dehesa**  
*Exact Shannon entropies for multidimensional harmonic systems*  
 Physica A 516 (2019) 273-279



268. **J.S. Dehesa, E.D. Belega, I.V. Toranzo and A.I. Aptekarev**  
*The Shannon entropy of high-dimensional harmonic and hydrogenic systems*  
 Int. J. Quantum Chem. 2019; e25977. <https://doi.org/10.1002/qua.25977>
269. **I.V. Toranzo, D. Puertas-Centeno, N. Sobrino and J. S. Dehesa**  
*Analytical Shannon information entropies for all discrete multidimensional hydrogenic states*  
 Int J Quantum Chem. 2019;e26077. <https://doi.org/10.1002/qua.26077>
270. **I.V. Toranzo, D. Puertas-Centeno and J. S. Dehesa**  
*Information theory of the D-dimensional harmonic systems. Application to Rydberg and quasiclassical states*  
 Work in preparation.
271. **J. S. Dehesa, con Aptekarev**  
*Momentum Rényi and Shannon entropies of multidimensional hydrogenic Rydberg states*  
 Work in preparation.
272. **I.V. Toranzo and J. S. Dehesa**  
*Entropic moments of D-dimensional harmonic and Coulomb systems: Asymptotics*  
 Work in preparation.

## ORGANIZING AND MANAGING ACTIVITIES

- Organizer, jointly with the below mentioned people, of the following 13 International Congresses / Simposia:
  - Jornadas sobre Computación Cuántica: Teoría y Experimentos.(With R. González-Férez) Enero 26- Febero 2 (2015) Granada
  - Jornadas sobre Información Cuántica y Aplicaciones.(With J.C. Angulo) Enero 12- Febero 14 (2014) Granada
  - Jornadas sobre Sistemas Complejos y Teoría de la Información.(With J.C. Angulo) Marzo 12- Mayo 14 (2013) Granada
  - Workshop on Generalised Special Functions of Mathematical Physics. January 26-28 (2012) Granada
  - Summer School on Quantum Matter: Foundations and New Trends. (With R. González Férez, B. Olmos, I. Lesanovsky and A. Kruger) September 18-22 (2011).

- Workshop on Orthogonal Polynomials, Special Functions and Applications. (With G. López-Lagomasino, J. Arvesú, A.I. Aptekarev and J. Gerónimo). August 29 - September 2 (2011).
  - Workshop on "Special Functions and Rational Approximations" (with W. van Assche, A. Aptekarev and F. Marcellán), Leuven, Belgium, 2003
  - Workshop on "Density Functionals of Fermionic Systems" (with R.J. Yáñez and E. Romera), Granada, Spain, 1995.
  - VII Symposium on Orthogonal Polynomials and their Applications (with J.C. Angulo, F.J. Gálvez and A. Zarzo), Granada, Spain, 1991.
  - The Density Functional Theory in Atoms, Molecules and Nuclei, Granada, Spain (1990).
  - Recent Advances in Theoretical Physics, Granada, Spain (1989)
  - Electron Scattering Processes with Nuclei, Granada, Spain (1988)
  - Condensed Matter Theories (with R. Guardiola), Granada, Spain, 1983
  - Mathematical and Computational Methods in Nuclei (with J.M.G. Gómez and A. Polls), Granada, Spain, 1982.
  - Interacting Bosons in Nuclei (with J.M.G. Gómez and J. Ros), Granada, Spain, 1980
  - Nuclear Giant Resonances (with R. Guardiola), Granada, Spain, 1979
- Secretary of the Division of Physical Sciences of the University of Granada (1981)
  - Chairman of the Division of Physical Sciences of the University of Granada (1982-83)
  - Vicechairman for Research of the University of Granada (1989-)
  - Director of the Institute "Carlos I" of Theoretical and Computational Physics (1993-2004)
  - Member of the Government Council of the University of Granada (1997-2003)
  - Member of the "Claustro" of the University of Granada (1985-2006)
  - Codesigner of the Spanish Physics Plan 2004-2007.
  - Elected member of Academia de Ciencias Exactas, Físico-Químicas y Naturales de Granada, since 2006.
  - Vicepresidente del Grupo Especializado de Física y Atómica y Molecular de la Real Sociedad Española de Física (2009-2013)

- Member of the Junta de Dirección of the Department of Atomic, Molecular and Nuclear Physics of the University of Granada (2005-2013).
- Reviewer of the program "Explora" of the Ministry of Science and Education (2006-10).
- Co-responsible of the teaching innovation project entitled "Physics of Information. Multidisciplinary Applications" University of Granada (27/10/2011-03/10/2012). Code 11-297.