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Dep. of Applied Mathematics and Physics
Facultad de Ciencias, Universidad de Alcalá
28871, Alcalá de Henares, Madrid, Spain

Curriculum Vitae

Higher Education

- 2003 – 2007 Ph.D in Mathematics, Universidad Carlos III de Madrid, Madrid, Spain
1998 Bachelor's degree in Education (Certificado de aptitud pedagógica)
Universidad de Sevilla (Spain). In Spain, this certificate qualifies to teach
at high-school level.
1993 – 1998 Universidad de Sevilla, Sevilla, Spain

Teaching Experience

- 2010 – Recitation courses at Universidad de Alcalá
Calculus I, 2 semesters
Linear Algebra, 2 semesters
Didactics in Mathematics, 3 years
2007 – 2008 Recitation courses at College of William and Mary, Virginia
Math 111 Calculus I – Single variable, 1 semester, 2 groups
Math 112 Calculus II – Theory of integration (single variable), 1 semester, 2 groups
Math 490, Seminar on Mathematics, 1 semester
2007 Instructor of REU Program (Linear Algebra), College William and Mary, Virginia
2004 Instructor of REU Program (Linear Algebra), College William and Mary, Virginia
2003 – 2007 Recitation courses at the Universidad Carlos III de Madrid, Madrid, SPAIN
Calculus I (Real Analysis), 1 semester
Laboratory of Calculus II, 1 semester
Linear Algebra in electrical technical Engineering, 2 semesters
Linear Algebra in mechanical technical Engineering, 2 semesters
Linear Algebra in industrial Engineering, 2 semesters
Introduction to MatLab in Linear Algebra and Calculus (Real Analysis), 3 semesters
Complementary Mathematics, 1 semester
Laboratory of Computational Mathematics, 3 semesters

Professional Experience

2012/09 –	Editor board of global research journal on mathematical studies.
2012/01 –	Editor board of Journal of Mathematical Research.
10/18/2008	Editor of Book of abstracts of the International meeting: RCTM'08 Conference in honor of Robert C. Thompson. California.
2006 –	Referee for publications of Elsevier, SIAM, and others.
08/30/2006 – 09/01/2006	Editor of Book of abstracts of the International meeting: Recent Trends in Constructive Approximation Theory. Leganés, Madrid.
2004–	Reviewer for Mathematical Reviews – 48 reviews
2001– 2002	Programmer, Arión Consultores, Sevilla, Spain

Service

2011 –	Representant of the department of Mathematics in teaching degree board.
2007	Webmaster of the Department of Mathematics of the UC3M.
2006/08	Webmaster of the <i>Orthogonality, Approximation Theory and Applications</i> group,
10/01/2005–	Representant of postgraduate students in the Department of Mathematics at the UC3M

Research Interests

Spectral Theory of second order differential and/or difference linear operators, Approximation theory, Special functions, Number Theory, Orthogonal and multi-orthogonal polynomials, Matrix Orthogonal polynomials, Riemann-Hilbert approach of Orthogonal polynomials, and Linear Algebra.

Professional Service Activities

- Member of the Society for Industrial and Applied Mathematics (SIAM), October 2008 –
- Member of the American Mathematical Society (AMS), June 2008 –
- Member of the Real Sociedad Matemática Española (RSME), 2007 –

Publications and Preprints

1. R. S. Costas-Santos and F. Marcellán, *q-Apell polynomials* 2012. Preprint
2. R. S. Costas-Santos and J F Sánchez-Lara, *Orthogonality of Multiple Meixner polynomials of type I for nonstandard parameters.*, 2012. Preprint
3. R. S. Costas-Santos and J F Sánchez-Lara, *Orthogonality and zeros of Multiple Meixner polynomials of type II for nonstandard parameters.*, 2012. Preprint
4. R. S. Costas-Santos and F. Marcellán, *Semiclassical quasi-orthogonal polynomials. A general difference calculus approach*, 2012. Preprint
5. R. S. Costas-Santos and F. Marcellán, *The complementary polynomials and the Rodrigues operator of classical orthogonal polynomials*. Proc. Amer. Math. Soc. **140** (2012), 3485–3493
6. R. S. Costas-Santos and J J Moreno-Balcázar, *The Semiclassical-Sobolev polynomials. A general approach*. J. Approx. Theory, **163**(1) (2011), 65–83. doi:10.1016/j.jat.2010.03.001

7. R. S. Costas-Santos and J F Sánchez-Lara, *Orthogonality of q -polynomials for nonstandard parameters*. J. Approx. Theory, **163**(9) (2011), 1246–1268. doi:10.1016/j.jat.2011.04.005
8. R. S. Costas-Santos, *On the elementary symmetric functions of a sum of matrices*. J. Algebra Number Theory, Adv. Appl. volume 1 Number 2 (2009), pages 99–112.
9. R. S. Costas-Santos and J F Sánchez-Lara, *Extensions of discrete classical orthogonal polynomials beyond the orthogonality*. J. Comp. Appl. Math. 225 (2009), 440–451. doi:10.1016/j.cam.2008.07.055
10. R. S. Costas-Santos and F. Marcellán, *q -Classical orthogonal polynomial: A general difference calculus approach*. Acta Applicandae Mathematicae (2009), pp. 1-22. doi:10.1007/s10440-009-9536-z
11. C. R. Johnson, R. S. Costas-Santos, and B Tachiev, *Matrices Totally Positive Relative to a Tree*. Elec. Linear Algebra 18 (2009), 211–221.
12. R. Álvarez-Nodarse, N. M. Atakishiyev and R. S. Costas-Santos, *Factorization of the hypergeometric-type difference equation on the uniform lattice*. ETNA Vol. 27 (2007), pp. 34-50
13. R. Álvarez-Nodarse, Y. F. Smirnov and R. S. Costas-Santos, *A q -analog of the Racah polynomials and q -algebra $SU_q(2)$ in quantum optics*. J. of Russian Laser Research, Volume 27, Number 1 (2006), 1-32.
14. R. S. Costas-Santos and F. Marcellán, *Second structure relation for q -semiclassical polynomials of the Hahn Tableau*. J. Math. Anal. Appl. **329** (2006), 206-228.
15. R. Álvarez-Nodarse, N M Atakishiyev and R S Costas-Santos, *Factorization of the hypergeometric-type difference equation on non-uniform lattices: dynamical algebra*. J. Phys. A: Math. Gen. 38 (2005), 153–174, MR2126099
16. R. Álvarez-Nodarse and R.S. Costas-Santos, *Limit relations between q -Krall type orthogonal polynomials*. J. Math. Anal. Appl. 322 (2005), 158–176. MR2238156
17. Charles R. Johnson, Stefan Leichenauer, Peter McNamara and Roberto Costas-Santos, *Principal minor sums of $(A + tB)^m$* . Linear Algebra and its Applications 411 (2005), 386–389. MR2178699
18. R. Álvarez-Nodarse and R. S. Costas-Santos, *Factorization method for difference equations of hypergeometric type on nonuniform lattices*. J. Phys. A: Math. Gen. 34 (2001), 5551–5569. MR1856663

Talks

- Mathematical Semina, Universidad de Alcalá. February 28, 2012.
- 11th OPSFA. Leganes. August 31, 2011.
- Mathematical Semina, UC3M, Leganes. March 17, 2011.
- International conference on CMMSE 2010. Almeria. June 26-30, 2010.
- Mathematical Seminar, Caltech, Pasadena, November 2008.
- RCTM'08 Conference in honor of Robert C. Thompson, UCSB, California, October 2008.

- WOPA'08 Conference in honor of Guillermo Lopez, UC3M, September 2008.
- Mathematical Seminar, College of William and Mary, October 2007.
- Mathematical Seminar, College of William and Mary, September 2007.
- Mathematical Seminar, University La Rioja, May 2007.
- Mathematical Seminar, University Almeria, November 2006.
- Mathematical Seminar, UC3M, October 2006.
- Workshop on Complex Analysis. Coimbra, Portugal. July 2006.
- International Conference on Difference equations, Homburg, Germany, March 2006.
- Mathematical Seminar, UC3M, March 2006.
- International Conference on Difference equations, Munich, Germany, July 2005.
- Special Functions Seminar, UC3M, November 2005.
- Mathematical Seminar, UC3M, March 2005.
- Mathematical Seminar, UC3M, April 2004.
- Mathematical Seminar, UC3M, March 2004.
- Mathematical Seminar, UC3M, May 2003.
- Workshop on Complex Analysis, University of Coimbra, March 2003.

Languages

English, Spanish.