

# Curriculum Vitae



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## Education:

- PhD in Computer Architecture, Universitat Polit cnica de Catalunya (UPC), Spain: April 2007.
- PhD in Computer Science, Universidad Central de Venezuela (UCV), Venezuela: July 2006.
- Magister Scientiarum in Computer Science, Universidad Central de Venezuela (UCV), Venezuela: 1999.
- Computer Science Engineer, Universidad Central de Venezuela (UCV), Venezuela: 1996.

## Positions Held

Associate Professor and Researcher, Department of Computer Architecture (DAC), UPC.

## Teaching Experience

Currently, I am a Professor in the Department of Computer Architecture at UPC: Undergraduate (Faculty of: Computer Science and Engineers of Telecommunications).

## Research Funding Participation

- “URA 369 Project”. 1998. Laboratoire d’informatique fondamentale de Lille, France. Responsible: Serge Petiton.
- “High Performance Computing II”. Spanish National Funding (CICYT) TIC 98-0511. From 1998 to 2001. Responsible: Mateo Valero Cort s.
- “High Performance Computing III: Architectures, Compilers, Operating Systems and Applications”. Spanish National Funding (CICYT) TI C2001-0995-C02-01. From 2001 to 2004. Responsible: Mateo Valero Cort s.
- “High Performance Computing IV: Architectures, Compilers, Operating Systems, Tools and Applications”. Spanish National Funding (CICYT) TIN2004-07739-C02-01. From 2005 to 2007. Responsible: Mateo Valero Cort s.
- “High Performance Computing V: Architectures, Compilers, Operating Systems, Tools and Applications”. Spanish National Funding (CICYT) TIN2007-60203-C02-01. From 2008 to 2011. Responsible: Mateo Valero Cort s.

Applications”. Spanish National Funding (CICYT) TIN2007-60625. From 2007 to 2012. Responsible: Mateo Valero Cortés.

- “HiPEAC European Network of Excellence on High-Performance Embedded Architecture and Compilation”. Funded under 6th FWP (Sixth Framework Programme). From 2004 to 2008. Responsible: Mateo Valero Cortés.
- “Sparse storage formats for High performance computing”. Vicerrectorat UPC. From 2009 to 2011. Responsible: Beatriz Otero and José R. Herrero.

## Research Area

In the last five years, my scientific work is based in the following topics:

- Strategies of domain decomposition, data distribution and load balancing for distributed environments.
- Software optimization using software techniques to improve application performance in distributed memory architectures.
- Optimization of sparse algebraic operations used in numerical methods when running on GPU (Graphics Processing Unit) platforms considering several sparse storage formats.

## Papers:

- Otero, B., Rodriguez, E. and Ventura J. (2016). “SURF-based mammalian species identification system”. *Multimedia Tools and Applications*. pp. 1 - 15. (ISSN 1380-7501).
- Córdova, L., Rojas, O., Otero, B. and Castillo J. (2016). “Compact finite difference modeling of 2-D acoustic wave propagation. *Journal of computational and applied mathematics*”. 295, pp. 83 - 91. (ISSN 0377-0427).
- Solano, F., Guevara-Jordan, J.; Rojas, O., Otero, B. and Rodriguez, R. (2016). “A new mimetic scheme for the acoustic wave equation”. *Journal of Computational and Applied Mathematics*. 295, pp. 2 - 12. (ISSN 0377-0427).
- Francés, J., Otero, B., Bleda, S., Gallego, S., Neipp, C., Urbano-Márquez, A. and Beléndez A. (2015) “A Multi-GPU and multi-CPU accelerated FDTD scheme for vibroacoustic applications”. *Computer Physics Communications*. 191, pp. 43 - 51.. (ISSN 0010-4655).
- Rojas, O., Otero, B., Castillo, J. and Day, S. (2013) “Low dispersive mimetic modeling of Rayleigh waves on partly-staggered grids”. *Computational Geoscience* (ISSN:: 1420-0597), 18(1), pp. 29-43.
- Otero, B., Astudillo, R. and Castillo, Z. (2013) Un esquema paralelo para el cálculo del pseudoespectro de matrices de gran magnitud. *Revista Internacional de Métodos Numéricos para Cálculo y Diseño en Ingeniería*. 31 - 1, pp. 8 - 12. (ISSN 0213-1315).
- Francés, J, Bleda, S., Márquez, A., Neipp, C., Gallego, S., Otero, B. and Beléndez, A. (2013). “Performance analysis of SSE and AVX instructions in multi-core CPUs and GPU

- computing on FDFT scheme for solid and fluid vibration problems”. *Journal of Supercomputing* (ISSN: 0920-8542), pp. 1-15.
- Gil, Marisa and Otero, B. (2014). “Modular design for smart urban WSN applications”. *International Journal of Computer Technology and Applications*. 5 - 2, pp. 270 - 277. 01/03/2014. ISSN 2229-6093.
  - Otero, B. and Gil, M. (2013). “Ambientes: on-the-fly usage of available resources through personal devices”. *International Journal of Ad hoc, Sensor & Ubiquitous Computing (IJASUC)* (ISSN: 0976-1764), Vol. 4, pp. 1-11.
  - Otero, B., Pascual, S. and Rocco, C. (2012). “Performance optimization of a Monte Carlo simulation code for estimating the all-terminal reliability of a network”. *Journal of Computing* (ISSN: 2151-9617), Vol. 4, pp.1-7.
  - Gil, M. and Otero, B. (2011). “Dynamic resource usage based on on-the-fly availability of personal devices”. *IEEE pervasive computing* (ISSN: 1536-1268), pp. 46.
  - Otero, B. and Gil, M. (2011). “Strategies of Domain Decomposition to Partition Mesh-Based Applications onto Computational Grids”. *Journal of Computing* (ISSN: 2151-9617).
  - Roberto Morales, Beatriz Otero and Marisa Gil (2010). “Mobile resource management for a better user experience: An audio case study”. 4<sup>th</sup> Symposium of Ubiquitous Computing and Ambient Intelligence. Valencia, Spain. pp. 7-10.
  - Beatriz Otero, Pere Barlet, Salvatore Spadaro and Josep Solé-Pareta (2009). “Mapping Ecology to Autonomic Communication Systems”. Technical Report UPC-DAC-RR-CAP-2009-13, Departament d'Arquitectura de Computadors, Universitat Politècnica de Catalunya. Barcelona, Spain.
  - Salvador Sahuquillo, Josep Solé-Pareta, Beatriz Otero, Laura Ferrari, Antonio Manzalini and Corrado Moiso (2009). “Self-organized server farms for energy savings”. In the 6<sup>th</sup> International Conference on Autonomic Computing and Communications. Poster Session. Barcelona, Spain.
  - Beatriz Otero and José M. Cela (2007). “A workload distribution pattern for grid environments”. In *International Conference on Grid Computing & Applications (GCA 2007)*, pp. 56-62, Las Vegas, NV, United States. (ISBN: 1-60132-032-9).
  - Beatriz Otero, José M. Cela, Rosa M. Badia and Jesús Labarta (2005). “Data Distribution Strategies for Domain Decomposition Applications in Grid Environments”. In *The 6<sup>th</sup> International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP-2005)*, Melbourne, Australia.
  - Beatriz Otero, José M. Cela, Jesús Labarta and Rosa M. Badia (2005). “Performance Analysis of Domain Decomposition Applications using Unbalanced Strategies in Grid Environments”. In the fourth International Conference on Grid and cooperative computing (GCC05), pp. 1031-1042, Beijing, China. (ISBN: 3-540-30510-6).

- Beatriz Otero, José M. Cela, Rosa M. Badia and Jesús Labarta (2004). “A Domain Decomposition Strategy for GRID Environments”. In EuroPVM/MPI 2004, Budapest , Hungary. (ISBN: 3-540-23163-3).
- Beatriz Otero, José M. Cela and Enric Fontdecaba (2003). “Different Surface Models for Progressive Lenses and their Effect in Parallelization”. In IASTED International Conference, pp. 443-448, Marbella, Spain. (ISBN: 0-88986-384-9).