

VÍCTOR DOMÍNGUEZ BÁGUENA

Curriculum vitae

January 2007

1. Personal Data

Name: Domínguez Báguena, Víctor
Born on: July 3 1974, in Zaragoza (Spain)
Professional address: Dep. Matemática e Informática,
Universidad Pública de Navarra,
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Current position: Profesor Contratado Doctor
in Universidad Pública de Navarra (Public University of Navarre)

2. Academic Degrees

University degree in Mathematics in 1997, specialisation in Applied Mathematics,
Universidad de Zaragoza. Average grade of the academic record: 2.810¹

¹Computed according to the following system: *pass mark* 1pt, *second class* 2pt, *first class* 3pt, *first class with distinction* 4pt.

Titulo de grado (First Degree) in 1998 with the master dissertation: *Estudio analítico y numérico de ecuaciones integrales con núcleo logarítmico* (Analytical and numerical study of integral equations with logarithmic kernel). Mark: First Class with Distinction.

Phd in Applied Mathematics with honours (Sobresaliente cum laude) by the Science Faculty of Universidad de Zaragoza in 2001. Doctoral dissertation: "Análisis asintótico de métodos de proyección para ecuaciones integrales de frontera" (Asintotic analysis of projection methods for boundary integral equations).

3. Academic positions

Full time assistant professor (profesor asociado) at the Universidad de Zaragoza, September 2000 to September 2001.

Full time assistant professor at the Universidad Pública de Navarra, October 2001 to September 2006.

Permanent full time assistant professor at the Universidad Pública de Navarra, since October 1st 2006.

4. Teaching publications

Matlab en cinco lecciones de numérico (Matlab in five lessons of numerical analysis), coauthored with Dr. María Luisa Rapún Banzo. To be published by Servicio de Publicaciones de la Universidad Pública de Navarra.

Available *online* in

http://www.unavarra.es/personal/victor_dominguez

5. Research activities

■ Visiting research

Universidad Nacional del Nordeste, Corrientes, Argentina. August, 1997 to December, 1997 (4 months).

University of Bath, Bath, United Kingdom, March 2003 to June 2003 (4 months)

University of Bath, Bath, United Kingdom, March 2004 to June 2004 (3 months).

Universidad de Zaragoza, Zaragoza, Spain, July 2004 to August, 2004 (2 months).

Universidad de Zaragoza, Zaragoza, Spain, February 2005 to August 2005 (4 months).

University of Bath, Bath, United Kingdom, April 2005 (2 weeks).

Universidad de Zaragoza, Zaragoza, Spain, February 2005 to August 2005 (4 months).

Universidad de Zaragoza, Zaragoza, Spain, February 2006 to August 2006 (4 months).

University of Bath, Bath, United Kingdom, June 2006 (1 week).

University of Bath, Bath, United Kingdom, December 2006 (1 week).

6. Research publications

■ Proceedings in national and international meetings

Métodos de cargas puntuales en simulación de problemas de ‘scattering’ acústico (with R. Celorrio and F.J. Sayas). "Actas del IV Congreso de métodos numéricos en Ingeniería", Sevilla (Spain). June 1999. Electronic.

On the averaged delta method for some acoustic scattering problems (with R. Celorrio and F.J. Sayas). "Proceedings of 6th International Congress on Sound and Vibration", Copenhagen (Denmark). July 1999, pp 547-554.

Variantes del método de colocación para ecuaciones integrales de frontera (with F.J. Sayas). "Actas del XVI CEDYA / VI CMA", Las Palmas de Gran Canaria (Spain). September 1999, pp 185-192.

Asymptotics of finite element Lagrange interpolation under the action of an integral operator (with R. Celorrio and F.J. Sayas). "Actas de VI Jornadas Zaragoza-Pau de Matemática Aplicada y Estadística", Jaca (Spain). September 1999, pp 151-158.

Boundary integral equations for the heat equation (with F.J. Sayas). "Actas de XVII CEDYA / VII CMA", Salamanca (Spain). September 2001. Electronic.

An improved quadrature method for integral equations with logarithmic kernel (with R. Celorrio and F.J. Sayas). "Actas de VII Jornadas Zaragoza-Pau de Matemática Aplicada y Estadística", Jaca (Spain). September 2001, pp 185-192.

Un método dual de colocación para la ecuación del ala generalizada. "Actas de XVIII CEDYA/VIII CMA", Tarragona (Spain). September 2003. Electronic.

Métodos de cuadratura para sistemas de ecuaciones integrales en el estudio de problemas de transmisión (with M.L. Rapún and F.-J. Sayas). "Actas de XVIII CEDYA/VIII CMA", Tarragona (Spain). September 2003. Electronic.

Métodos de cuadratura para sistemas de ecuaciones integrales en el estudio de problemas de transmisión (with M.L. Rapún and F.-J. Sayas). "Ac-

tas de XVIII CEDYA/VIII CMA", Tarragona (Spain). September 2003. Electronic.

Solapamiento de elementos finitos y elementos de contorno para la ecuación de Stokes (with F.J. Sayas). "Actas de XIX CEDYA/IX CMA", Leganés (Spain). September 2005.

A robust boundary integral method for high frequency (with I.G. Graham and V. Smyshlyaev). "Extended abstracts for IABEM 2006", Graz (Austria). July 2006.

■ Publications in International Journals

Local expansions of periodic spline interpolation with some applications (with F.J. Sayas). Math. Nachr. **227** (2001), pp 43-62. Impact factor: 0.465.

Full asymptotics of spline Petrov-Galerkin methods for some periodic pseudodifferential equations (with F.J. Sayas). Adv. Comput. Math. **14** (2001), pp 75–101. Impact factor: 1.143.

Periodic Dirac Delta distributions in the boundary element method (with R. Celorrio and F.J. Sayas). Adv. Comput. Math. **17** (2002), pp 211–236. Impact factor: 1.143

An interior–exterior Schwarz algorithm and its convergence (with R. Celorrio and F.J. Sayas). C. R. Math. Acad. Sci. Paris **334** (2002), pp 923-926. Impact factor: 0.469

An asymptotic series approach of quallocation methods (with F.J. Sayas). J. Integral Equations Appl. **15** (2003), pp 113–151.

Stability of discrete liftings (with F.J. Sayas). C. R. Math. Acad. Sci. Paris **337** (2003), pp 805-808. Impact factor: 0.469

High order quadrature and collocation methods for some logarithmic kernel integral equations. J. Comp. Appl. Math. **161** (2003), pp 145-159. Impact factor: 0.569.

Overlapped BEM-FEM and some Schwarz iterations (with R. Celorrio and F.J. Sayas). CMAM **4** (2004), pp 3-22.

Dirac delta methods for Helmholtz transmission problems (with M.L. Rapún and F.J. Sayas). To appear in en Adv. Comput. Math. Impact factor: 1.143.

Coupling BEM-FEM for solving a transmission problem (with F.J. Sayas). To appear in Appl. Numer. Math. Impact factor: 0.589.

A BEM-FEM overlapping algorithm for the Stokes equation (with F.J. Sayas). To appear in Appl. Math. Comput. Impact factor: 0.688.

A hybrid numerical-asymptotics boundary integral method for high-frequency acoustic scattering (with I.G. Graham and V. Smyshlyaev). Bath Institute

For Complex Systems Preprint 1/2006. To appear in Numerische Mathematik. Impact factor: 1.143.

Asymptotic properties of some triangulations of the sphere (with Natalia Boal and Javier Sayas). To appear in J. Comp. Appl. Math. Impact factor 0.569.

A simple Matlab implementation of the Argyris element (with F.J. Sayas). Preprint Sem. G. Galdeano 26 (2006), Universidad de Zaragoza. Submitted.

7. Research projects

Perturbación singular y métodos de contorno. Principal researcher F. Lisbona. Supported by "Dirección General de Investigación Científica y Técnica, Ministerio de Educación y Ciencia", ref. PB97-1013, 1997-2000.

Aplicación de las Matemáticas a la resolución de problemas del entorno. Principal researcher Monique Madame Tort. Proyecto de trabajo en la comunidad de los Pirineos, supported by "Diputación General de Aragón" ref. CTP/99, 2000-2001.

Métodos robustos en problemas con convección dominante y simulación de la dispersión de ondas estacionarias. Principal researcher Francisco Javier Sayas. Supported by "Ministerio de Ciencia y Tecnología", ref. BFM2001-2521, 2001-2004.

Métodos analíticos, numéricos y simbólicos en Física e Ingeniería. Principal researcher Jesús Palacián Subiela. Supported by "Gobierno de Navarra", ref. 134/2002, 2002-2004.

Aplicación de las Matemáticas a los problemas del suelo y del subsuelo. Principal researcher at Navarre Juan José Torrens Íñigo. Supported by "Diputación General de Aragón", 2004-2005.

Problemas inversos y estabilización de métodos numéricos en perturbación singular, poroelasticidad y difusión. Principal researcher Carmelo Clavero. Supported by "Ministerio de Ciencia y Tecnología" Ref. MCYT/FEDER MTM2004-01905, 2004-2007.

Métodos cualitativos y cuantitativos en sistemas dinámicos con aplicaciones en Física e Ingeniería. Principal researcher: Jesús Palacián Subiela. Supported by "Gobierno de Navarra", 2005-2006.

Aplicación de las Matemáticas a los problemas al estudio de fenómenos de progradación. Principal researcher at Navarre Juan José Torrens Íñigo. Proyecto de trabajo en la comunidad de los Pirineos, 2006-2007.

8. Communications at scientific meetings

■ National meetings

Métodos de cargas puntuales en simulación de problemas de ‘scattering’ acústico (with R. Celorrio and F.J. Sayas). IV Congreso de métodos numéricos en Ingeniería, Sevilla (Spain). June 1999.

Variantes del método de colocación para ecuaciones integrales de frontera (with F.J. Sayas). XVI CEDYA / VI CMA, Las Palmas de Gran Canaria (Spain). September 1999.

Boundary integral equations for the heat equation (with F.J. Sayas). XVII CEDYA / VII CMA, Salamanca (Spain). September 2001.

Un método dual de colocación para la ecuación del ala generalizada. XVIII CEDYA/VIII CMA, Tarragona (Spain). September 2003.

Métodos de cuadratura para sistemas de ecuaciones integrales en el estudio de problemas de transmisión, (with M.L. Rapún and F.-J. Sayas). XVIII CEDYA/VIII CMA, Tarragona (Spain). September 2003.

Solapamiento de elementos finitos y elementos de contorno para la ecuación de Stokes, (with F.-J. Sayas). XIX CEDYA/IX CMA, Leganés, Spain. September 2005.

■ International meetings

On the averaged delta method for some acoustic scattering problems (with R. Celorrio and F.J. Sayas). 6th International Congress on Sound and Vibration, Copenhagen (Dinamarca). July 1999.

On spline Galerkin methods for singular and hypersingular integral equations (with F.J. Sayas). 3rd European Conference on Numerical Mathematics and Advanced Applications, Jyväskylä (Finlandia). July 1999.

Asymptotics of finite element Lagrange interpolation under the action of an integral operator (with R. Celorrio and F.J. Sayas). VI Jornadas Zaragoza-Pau de Matemática Aplicada y Estadística, Jaca (Spain). September 1999.

A new look to the asymptotics of quallocation methods (with F.J. Sayas). Second international conference on boundary integral methods: theory and applications, Bath (United Kingdom). September 2000.

Spaces of Dirac delta distributions applied to boundary integral equations (with F.J. Sayas). 4rd European Conference on Numerical Mathematics and Advanced Applications, Ischia (Italia). July 2001.

An improved quadrature method for integral equations with logarithmic kernel (with R. Celorrio and F.J. Sayas). VII Jornadas Zaragoza-Pau de Matemática Aplicada y Estadística, Jaca (Spain). September 2001.

Superposition d’éléments finis et éléments finis de frontière (with R. Celorrio and F.J. Sayas). CANUM 2002, Anglet (Francia). May 2002.

- A Non-Standard FEM/BEM coupling for the Helmholtz Equation* (with R. Celorrio and F.J. Sayas). Finite Element Methods: Fifty Years of Conjugate Gradients, Jyväskylä (Finlandia). June 2002.
- Overlapping of finite and boundary element methods for transmission problems in scattering of thermal waves* (with R. Celorrio, M.L. Rapún and F.J. Sayas). LMS Durham Symposium on Computational methods for wave propagation in direct scattering, Durham, (United Kingdom). July 2002.
- Overlapping of finite and boundary element methods* (with R. Celorrio, M.L. Rapún and F.J. Sayas). Foundations of Computational Mathematics, Minneapolis (Estados Unidos). August 2002.
- BEM removal of cracks and obstacles in some finite element computations* (with F.J. Sayas), MAFELAP, Uxbridge (United Kingdom). June 2003.
- An overlapped BEM-FEM coupling for solving a transmission problem* (with F.J. Sayas). Third international conference on Boundary Integral Methods: Theory and Applications, Reading (United Kingdom). September 2004.
- Triangulations of spherical polygons and applications* (with N. Boal and F.J. Sayas). Foundations of Computational Mathematics, Santander (Spain). June 2005.
- A robust boundary integral method for high frequency acoustic scattering by convex curves* (with I.G. Graham and V. Smyshlyaev). The 5th UK conference for Boundary Integral Methods , Liverpool (United Kingdom). September, 2005
- Geometric and Functional Aspects of Some Triangulations of Sphere-like Bodies* (with F.J. Sayas and N.Boal). VIII Jornadas Zaragoza-Pau de Matemática Aplicada and Estadística, Jaca (Spain). September 2005.
- A robust boundary integral method fo high frequency acoustic scattering by convex curves* (with Ivan G. Graham and V. P. Smyshlyaev). MAFELAP 2006, Uxbridge (United Kingdom). June 2006.
- Solving the Stokes equation by overlapping boundary and finite element methods* (with Francisco-Javier Sayas). MAFELAP 2006, Uxbridge (United Kingdom). June 2006.
- A robust boundary integral method for high frequency* (with I.G. Graham and V.P. Smyshlyaev). IABEM 2006, Graz (Austria). July 2006.
- An asymptotic derived boundary element method for high frequency scattering problems in 2D (with I.G. Graham and V.P. Smyshlyaev). WONAPDE, Concepción (Chile). January 2007.
- Robust boundary integral methods in high frequency acoustic scattering* (with I.G. Graham y V.P. Smyshlyaev). 23rd annual GAMM-Seminar Leipzig on Integral Equation Methods for High-Frequency Scattering Problems, Leipzig (Germany). January 2007.

9. Seminars and courses

Teoría de espacios de Hilbert. Universidad Nacional del Nordeste, September 1997.

Aplicaciones de espacios de Hilbert. Universidad Nacional del Nordeste, October 1997.

Funciones de Bessel y polinomios de Chebyshev. Universidad Nacional del Nordeste, October 1997.

Breve introducción a las ecuaciones integrales. Universidad Nacional del Nordeste, November 1997.

Breve introducción al Fortran 90. Universidad de Zaragoza. December 2000, 6 hours of lectures.

Introducción al Fortran 90. Universidad Pública de Navarra. November 2001, 6 hours of lectures.

Superposición de elementos finitos y elementos de contorno: teoría e implementación, en Jornadas BEM-FEM, Universidad de Zaragoza, June 2002, Zaragoza (Spain).

Solapamiento de métodos de contorno y elementos finitos para la resolución del problema de Dirichlet para la ecuación de Helmholtz. Universidad Pública de Navarra. November 2002.

Métodos de contorno para la simulación de la dispersión de ondas acústica a altas frecuencias, seminar given in the course "Zaragoza Numérica Curso y encuentro de Análisis Numérico", June 2005.

Una (no tan breve) introducción al Fortran 90, course in Centro de Energías Renovables (National Renewable Energies Centre), Pamplona, 8 hours of lectures.

10. Attendance at courses and workshops

Seminario sobre Simulación Numérica en Problemas de Acústica e Interacción Fluido–Estructura, July 1998, Vigo (Spain).

IV Escuela de Otoño Hispano-Francesa sobre Simulación Numérica en Física e Ingeniería, September 2000, Laredo (Spain).

French-Finnish Seminar on Optimization and Parallel Computing and Numerical Methods for Scientific Computing: variational problems and applications, June 2002 Jyväskylä (Finlandia).

V Escuela de Otoño Hispano-Francesa sobre Simulación Numérica en Física e Ingeniería, September 2002, Jaca (Spain).

Direct and Inverse Scattering Problems, January 2003, INRIA, Versailles (France).

Zaragoza Numérica. Curso y encuentro de Análisis Numérico, June 2003, Zaragoza (Spain).

Zaragoza Numérica. Segundo curso y encuentro de Análisis Numérico, June 2005, Zaragoza (Spain).

Computation of Flow & Transport in Heterogenous Media, 19-20 de June 2006, Bath, United Kingdom.

11. Grants and awards

Beca de Investigación CONSI+D (predoctoral fellowship), 1998, Diputación General de Aragón, ref. B48/98, May 1998 to September 2000.

Premio de Licenciatura García Galdeano en Matemáticas (García Galdeano award in Mathematical Sciences) in the academic year 1997-1998.

Premio Extraordinario de Licenciatura en Ciencias, Sección de Matemáticas (Extraordinary Award in Mathematical Sciences) in the academic year 1997-1998.