

Maria Rosaria Capobianco Short CV

Senior Researcher and Head of Naples Research Unit for the Istituto per le Applicazioni del Calcolo (IAC) "M. Picone", CNR - National Research Council; Degree in Mathematics, University of Napoli "Federico II".

The research activity is addressing contents concerning numerical methods for solving differential and integral problems in applied mathematics which requires the knowledge in several fields of mathematics ranging from numerical analysis to functional analysis, theory of approximation, theory of special functions, algebra and more properly algorithmic and computational aspects.

The fields of interest include Abel's Integral Equations for applications in Computer Tomography, Evolutionary Models of the Genetic Code, Emission and dispersion models for Atmospheric Pollution, Singular and hypersingular integral equations in physics and engineering problems, and focuses on

- Study of Approximation Operators: Construction of optimal interpolation processes; uniform approximation by extended Lagrange and Lagrange operator; Approximation in weighed Sobolev spaces by the extended Lagrange and Lagrange operator; Approximation in spaces of weighed Sobolev by Hermite operator; Approximation in weighed L_p spaces with $1 < p < \infty$ by de la Vallée Poussin operator; Polynomial wavelets interpolating on zeros of orthogonal polynomials in $[-1; 1]$.
- Quadrature formulas: numerical quadrature of singular Cauchy integrals and weakly algebraic integral integrals; numerical quadrature of hypersingular integrals; numerical quadrature of oscillating integrals; numerical quadrature of Hilbert's Transform; numerical quadrature on unbounded intervals; numerical quadrature for double integrals.
- Numerical methods for singular and hypersingular integral equations and fast algorithms for numerical resolution of linear systems; iterative methods and fast algorithms for numerical resolution of nonlinear systems.

Maria Rosaria Capobianco is also from 2001 Member of The Central Guarantee Committee for Equal Opportunities, Enhancement of Workers' Health and Against Discrimination, CUG – CNR (from 2001-2011 formerly Equal Opportunities Committee CPO-CNR).