Franco Brezzi

Senior Collaborator at the Institute of Applied Mathematics and Informatic Technologies of the Italian Research Council.

Franco Brezzi works on the theoretical bases of Scientific Computing, and in particular in Numerical Methods for Partial Differential Equations, where he has made fundamental contributions to Mixed Finite Element Methods, Mimetic Finite Differences, or Virtual Elements, with applications to Structural Mechanics, Fluid Mechanics, and Electro-Magnetics. He was awarded the Gauss-Newton gold medal of the International Association for Computational Mechanics at the World Congress of Computational Mechanics in 2004, the SIAM von Neumann award in 2009, and the Leonhard Euler Medal and the Ritz-Galerkin Medal of the European Community on Computational Methods in Applied Science in 2014 and 2016, respectively. Franco Brezzi was an Invited Plenary Speaker at the ICM in 2014 in Seoul, and an Invited Speaker at the ICM in 1986 in Berkeley. He had been President of the Italian Mathematical Union from 2006 to 2012, and Vice President of the European Mathematical Society from 2012 to 2016. He is also a member of the European Academy of Sciences and of the Accademia dei Lincei, and fellow of the International Association of Computational Mechanics and of the Society for Industrial and Applied Mathematics (SIAM).

TITLES and ABSTRACTS

Public Lecture

VEMs: A New Weapon in Scientific Computing

ABSTRACT After a very brief overview on the use of the MSO (Modelization, Simulation, Optimization) for Industrial and Scientific Applications, we will concentrate on the “Simulation” aspects, and in particular on the approximate solution of (some fundamental) Partial Differential Equations. Then we will further specialize on Galerkin methods, and among them on the ones based on piecewise smooth trial and test functions. Finally, Virtual Element Methods will come into play, allowing more general and more effective decompositions of the computational domain in pieces of very general shape.

Specialised one

Serendipity VEMS

The talk will start recalling the original formulation of Virtual Element Methods (of nodal and of mixed type) of general order, and their serendipity versions. Applications to simple Magneto static problems will also be discussed.