Coordinador PD Física y Matemáticas

	**Juan Segundo Soler Vizcaíno**. Juan Soler began his research within the team of his PhD. advisor Pierre-Arnaud Raviart (U. Pierre et Marie Curie), analyzing some problems in the framework of fluid-mechanical equations. His proof that a vector measure such as a vortex filament is admissible in the functional context of the Navier-Stokes equation was pioneering in the field. Since that time, Euler and Navier-stokes equations are recurring topics in his research career, along which he has had the opportunity to collaborate with Amable Liñán and George-Henri Cottet, among others.
personal webpage	Contacto: Directorio UGR

From a thematic point of view, the study of singularities is a constant in his trajectory: “Every interesting fact takes place at interfaces, which are often singular”. In the early 90s, he came into the world of kinetic equations with an original approach that has persisted in his later work, consisting of using in an integrated way techniques and ideas stemming from several disciplines such as fluid mechanics, classical or relativistic kinetic equations, quantum mechanics, biomathematics or social sciences. Among the results of this approach, we can outline the description of the asymptotic behaviour and qualitative properties of kinetic equations, the study of variational problems arising in the investigation of orbital stability of gravitating galaxies (Vlasov-Poisson or Vlasov-Einstein models), the behaviour of nonlinear Schrödinger equations or the analysis of coagulation-fragmentation models. Luis L. Bonilla, Isabelle Catto, Jean Dolbeault, Thierry Goudon, Pierre-Emmanuel Jabin, Peter Markowich, Christian Ringhofer, Giuseppe Toscani or Juan L. Vazquez have been some of his collaborators in this research.

The pioneering ideas that opened the way to the mathematical formalization of the hydrodynamic low-field (parabolic) and high-field (hyperbolic) limits arose from his collaborations with Frédéric Poupaud. This description propels the relations between the macroscopic models and their microscopic or kinetic counterpart. Later, these ideas were incorporated, in collaboration with Nicola Bellomo, to multicellular interaction models and growth in order to deduce hyperbolic or dispersive (but not diffusive) models. His approach to flux-saturated mechanisms follows the aim of limiting the diffusive processes in biomathematics. Some of his collaborators in this field have been Juan Campos, José M. Mazón and Vicent Caselles.

From his recent research, it is worth highlighting the relevant role that he attributes, on one side, to the predictive capability of a model as a cornerstone for its mathematical viability, and on the other side to multiple interactions versus binary interactions in order to detect and understand emerging processes in the collective behaviour of species.

In 1998 he founded the programme FISYMAT, widely recognized in postgraduate training nowadays, around which he organized BIOMAT, an international school that has been revealed as a benchmark in Biomathematics.

From his training work, a prominent school has emerged: José A. Carrillo, José L. López, Juan Nieto, Óscar Sánchez, José A. Cañizo, Juan Calvo and Pilar Guerrero.

He has coordinated 4 projects in Framework Programmes (European Commission), besides his extensive experience in Spanish projects, and published more than 70 articles collected in ISI-Thompson. His “h” number is 20 (ISI) or 24 (Google Scholar). He is currently part of the editorial board of prestigious international publications: “Mathematical Models and Methods in the Applied Sciences”, “EMS Surveys in Mathematical Sciences”, AMS-RSME book series: Mathematical Surveys and Monographs, University Lecture Series, Graduate Studies in Mathematics. |