QUALITATIVE THEORY AND NON-DEGENERATE AND DEGENERATE BIFURCATIONS IN n-DIMENSIONAL DYNAMICAL SYSTEMS

Fact Sheet

Project Information

QURIBIUS

Grant agreement ID: 235415

Project closed

Start date
1 July 2009

End date
30 June 2011

Funded under
Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Total cost
No data

EU contribution
€ 231 036,29

Coordinated by
IMPERIAL COLLEGE OF SCIENCE TECHNOLOGY AND MEDICINE
United Kingdom

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Objective

Dynamical systems theory contains important tools in investigating various theoretical and practical models generated by systems of differential equations. Such models may be found in a lot of areas, ranging from Mathematics, Engineering to Medicine and Psychiatry. In this project we address some unexplored themes in this field. We will study degenerate codimension-2 bifurcations in n-dimensional dynamical systems. Of these bifurcations we will focus on the fold-Hopf degenerate bifurcation, firstly in three dimensional nonlinear continuous dynamical systems and then we will generalize it for n-dimensional dynamical systems. In discrete dynamical systems, an analogous of the continuous fold-Hopf bifurcation will also be addressed. The existence and number of limit cycles in two-dimensional (polynomial, Hamiltonian, perturbed Hamiltonian) continuous and discontinuous differential systems is another objective of this project. Using Melnikov functions of any order we will give new insights on the existence and number of limit cycles in these systems. Finally, we are interested in investigating some practical models.

Fields of science (EuroSciVoc)

natural sciences > mathematics > pure mathematics > mathematical analysis > **differential equations**

natural sciences > mathematics > applied mathematics > **dynamical systems**

Keywords

Attractors | Bifurcations | Chaos theory | Differential equations | Dynamical systems theory | Limit cycles

Programme(s)

FP7-PEOPLE - Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Topic(s)

FP7-PEOPLE-IEF-2008 - Marie Curie Action: "Intra-European Fellowships for Career Development"

Call for proposal

FP7-PEOPLE-IEF-2008
See other projects for this call

Funding Scheme

MC-IEF - Intra-European Fellowships (IEF)

Coordinator

IMPERIAL COLLEGE OF SCIENCE TECHNOLOGY AND MEDICINE

EU contribution

€ 231 036,29

Total cost

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Region

London > Inner London — West > Westminster

Activity type

Higher or Secondary Education Establishments

Links

Contact the organisation Website
Participation in EU R&I programmes

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