PhD in Informatics and Mathematical and Physical Sciences

course title
Lyapunov exponents of ordinary differential equations: theory and computation

what
Lyapunov exponents (LEs) are key quantities in the study of the long-time behavior of dynamical systems. Introduced by A.M. Lyapunov in his celebrated doctoral thesis on "The general problem of the stability of motion" (defended in the year 1892), they somehow constitute a suitable generalization to nonautonomous problems of the characteristic roots related to the stability of equilibria and of the analogous Floquet multipliers for periodic solutions. Aim of this course is at studying the basic features of the LEs for ordinary differential equations. A first part (approximately 12hrs) is devoted to their formal definition and the analysis of their theoretical properties, leading to the notions of reducible and regular systems. The further notion of stable LEs serves as a natural link to the second part of the course (approximately 12hrs), where numerical methods for their computation are discussed, with attention to their nature (intrinsically connected to that of the LEs themselves) and their implementation.

when
first part:

monday	02 november 2015	14.00-16.00
wednesday	04 november 2015	14.00-16.00
monday	09 november 2015	14.00-16.00
thursday	12 november 2015	13.30-15.30
monday	16 november 2015	14.00-16.00
thursday	19 november 2015	13.30-15.30

second part:
   to be defined, probably december 2015

where
Department of Mathematics and Computer Science (meeting room)
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who
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