



DEPARTMENT OF MATHEMATICS & APPLIED MATHEMATICS

FACULTY OF SCIENCE  
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SOUTH AFRICA

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## Two PhD student positions in Nonlinear Dynamics and Chaos

Applications are invited for two doctoral student positions **in the Department of Mathematics and Applied Mathematics (MAM) at the University of Cape Town (UCT), South Africa.**

Both students will work **under the supervision of Dr. Haris Skokos** in the framework of the research project '*Chaos in disordered nonlinear lattices*' funded by the National Research Foundation (NRF) of South Africa. The scope of the project is to investigate the mechanisms of chaos in various models of disordered nonlinear lattices in one and two dimensions. Such models are described by Hamiltonian functions with many degrees of freedom and are related to several significant physical processes like for example the conductivity of materials and the propagation of light in optical waveguides. By performing extensive numerical simulations for various parameter values of these models and by using several modern methods of chaos detection the PhD students will attempt to understand how chaoticity influences the dynamical properties of disordered lattices, emphasizing the characteristics of energy transport in such systems. Although, nowadays is common knowledge that energy spreading in disordered media is a chaotic process, the details of this chaotic behavior have not been studied in depth. The project aims to fill exactly this void.

Prerequisites include very good analytical and programming skills, high motivation for doing independent research, ability to productively work in a research team and a creative mind. Experience in numerical methods, physical models, and dynamical systems (as evidenced, e.g., by a MSc degree in Applied Mathematics, Physics or related fields) are advantageous.

**For further information** about the positions, please contact Dr. Haris Skokos, email: [haris.skokos@uct.ac.za](mailto:haris.skokos@uct.ac.za).

**Application process:** Interested applicants should send 1) a letter of motivation stating also their earliest availability to start their work in Cape Town, a curriculum vitae, a summary of MSc thesis, copies of transcripts and degree certificates (as a single PDF file), 2) a copy of MSc degree dissertation and also arrange for two letters of recommendation directed to Dr. Haris Skokos via email ([haris.skokos@uct.ac.za](mailto:haris.skokos@uct.ac.za)). Review of applications will begin immediately and will continue until the positions are filled.

Both PhD positions are in accordance with the NRF regulations.

UCT is striving to achieve a more equal race/gender balance and black and female South African candidates are particularly encouraged to apply.