Imperial College London
Department of Civil & Environmental Engineering
Structures Section

IMPERIAL

Dr.-Ing. habil. Anton Köllner
Lecturer in Structural Mechanics
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PhD position in Structural Mechanics
with specialization in structural instability phenomena

A PhD scholarship is available at the Department of Civil and Environmental Engineering (Structures Section) in the field of Structural Mechanics with specialization in structural instability phenomena. Applications from suitable candidates are welcome until 9 June 2024 (11:59pm BST).

About the post

Detailed understanding of structural instability phenomena is pivotal in designing engineering structures. Current research aims to enhance structural capabilities by exploiting instabilities to generate functionality or design performance or to develop novel meta/architectured materials. By means of advanced analytical and numerical modelling, the successful candidate will pursue research to address (at least) one of the following areas:

- developing computational models to trace the stability landscape of structures exhibiting distinct instability phenomena,

- linking structural instability phenomena with material failure in lightweight structures,

- developing (damage tolerant) design guidelines for structural members made from composite and homogeneous materials (e.g. stainless steels),

- generating pre-programmed structural responses in metamaterials by exploiting buckling instabilities.

Experimental testing, through making use of additive manufacturing techniques, will be encouraged to validate and explore models and concepts, whenever possible.
The research will be conducted under the supervision of Dr Köllner (Lecturer in Structural Mechanics).

Requirements – skills

The successful candidate is expected to have

- a strong background in structural mechanics,

- excellent knowledge of solid mechanics would be advantageous,

- some experience in using algebraic manipulation software tools (e.g. Mathematica, Matlab, Maple, python, etc.),

- some experience in using finite element software (e.g. Abaqus),

- some experience in programming (e.g. python, Fortran, C++) is desirable but not mandatory.

Furthermore, the candidate must

- demonstrate a strong analytical and methodical work approach,

- be highly motivated, and

- be capable of working in a self-organized and independent manner.

Requirements – qualification

- an upper second or first class degree (or international equivalent) in Civil, Mechanical, Aerospace or Materials Engineering (or closely related disciplines),

- Master's degree in the relevant area, and

- very good command of English (oral and written); IELTS: 6.5 (min. 6 in all elements) or TOEFL: 92 (min. 20 in all elements).

Funding

The PhD scholarship will provide funding for 3.5 years that includes tuition fees (in full for Home/UK students) and a tax-free subsistence / living stipend. Note that international students are welcome to apply but tuition fees will only cover the Home/UK (+Ireland) students rate.

How to apply

Please send the following documents (within in a single PDF-document) no later than **9 June 2024 (11:59pm BST)** via e-mail to Dr Köllner (a.koellner@imperial.ac.uk):

- cover letter outlining your motivation, background and suitability,

- curriculum vitae,

- all university certificates and transcripts listing all grades received,

- a maximum two page document (min. font size 11pt) in the form of a scientific report summarizing research projects that you have undertaken (e.g. final year project),

- details of two academic referees (affiliation, e-mail) with a short paragraph outlining your relation to them.

For further information and informal queries about the position, please contact Dr Köllner by e-mail.