

ANNOUNCEMENT FOR THE PROVISION OF A WORKPLACE

VAC-2019-69 – Severo Ochoa PhD Position in Computational Design & Analysis of Engineering Metamaterials Group

The International Centre for Numerical Methods in Engineering (CIMNE, www.cimne.com) is a research centre, created in 1987 by consortium between the Catalan Government and the Technical University of Catalunya, devoted to the development and application of numerical methods to a wide range of areas in engineering. CIMNE has been selected as a Severo Ochoa Centre of Excellence for the period 2019-2023. This is the highest level of recognition of excellence and leadership awarded to a research centre in Spain.

CIMNE is offering a research position that will be funded by the Severo Ochoa Programme.

Position details

Number of vacancies: 1

Category: PhD (PHD3)

Workplace: Barcelona

Salary (gross): 16.167,91 EUR

Weekly working hours: Full time

Duration: 3 years

Functions to be developed by the applicant

CIMNE is looking for a **PhD Researcher** to be part of the Research and Technical Development (RTD) Group on Computational Design & Analysis of Engineering Metamaterials.

The general research topic of the group hosting the grant is the *Computational Design of Materials and Metamaterials*. The considered research methodology lies in three pillars:

- Hierarchical multiscale modeling of materials*, accounting for the topology and the morphological distribution of the material compounds, at scales below the observable (macroscopic) scale. Typical considered low scales are mesoscopic/microscopic scales.
- Development and use of numerical optimization techniques* for achieving specific goal-oriented optimal properties for the designed materials and meta-materials, and
- Development of Reduced Order Modeling (ROM) and High-Performance Reduced Order Modelling (HP-ROM) methods* to make the resulting material design procedures affordable (in terms of computational time) for daily use in research and industry.

The research on this topic has been strongly supported during the last 7 years by the European Research Council (ERC) that granted to the group with three of the highly prestigious ERC-Grants, i.e.:

- *COMPDESMAT (Advanced tools for Computational Design of Engineering Materials)* that was granted by the European Research Council with the Advance Grant (ERC-2012-AdG 320815) to Prof. Xavier Oliver for the period 2012-2018 (<http://www.cimne.com/compdesmat/>)

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- *CATALOG (Computational Catalog of Multiscale Materials: a plugin library for industrial finite element codes)* that was granted by the European Research Council with the Proof of Concept grant (ERC-2017-PoC 779611 to Prof. Xavier Oliver for the period 2017-2019 (<http://www.cimne.com/catalog>))
- *METACOUSTIC (Computational Design and Prototyping of Acoustic Metamaterials for Tailored Insulation of Noise)* recently granted, in September 2019, by the European Research Council with the Proof of Concept grant METACOUSTIC (Grant Agreement number: 874481 — METACOUSTIC — ERC-2019-PoC) to Prof. Xavier Oliver for the period 2019-2021 (website under construction).

The functions assigned to the candidate will be:

- Complete a PhD on Civil/Mechanical/Aeronautical Engineering. The candidate is expected to complete the PhD thesis in a maximum of three years.
- Collaborate with various research groups within CIMNE and worldwide.
- To publish a minimum of two papers in JCR journals during the PhD period.

Requirements

1. The position is aimed at students (Spanish nationals, EU and non EU citizens) who have completed one of the following options:
 - a) The studies that lead to an official Spanish, or European Higher Education Area, 1st cycle university degree (BSc) in either Civil /Mechanical/Aeronautical Engineering and that have 180 credits (ECTS) of an official university degree.
 - b) A degree from a non-European Higher Education Area university that gives access to MSc studies in either Civil /Mechanical/Aeronautical Engineering.To be eligible for the scholarship grant the applicants have to be formally enrolled to a doctoral program or meet the conditions to be enrolled to a doctoral program at the moment of the recruiting.
2. Excellent academic record.
3. High working knowledge of English.
4. Candidates who have already been awarded a PhD are not eligible to apply.
5. Candidates with high skills and interest in the following areas are searched: continuum mechanics, material modelling, computational solid mechanics, numerical methods, applied mathematics and scientific computer programming.

Other valued skills

- Previous research or academic experience in the field of the position.
- Programming skills
- Language skills
- Ability to code in Matlab and C++ languages.

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Evaluation procedure

The requirements and merits will be evaluated with a maximum mark of 100 points. Such maximum mark will be obtained by summing up the points obtained in the following items:

- Academic record (60%)
- Previous research and academic experience in the field of the position (20%)
- Programming skills (10%)
- Language skills (10%)

How to apply

Candidates must complete the "[Application Form](#)" on our website, indicating the reference of the vacancy and attaching the following documents:

- A curriculum vitae
- A motivation letter
- At least one reference letter
- Certified academic record (both Undergraduate and the MSc degrees)

The deadline for registration to the offer ends on **January 31, 2020 at 12:00 noon**.

Application will be reviewed by CIMNE Severo Ochoa selection committee. The shortlisted candidates may be called for an interview and must send to seleccio@cimne.upc.edu all the proving documentation of the requirements and merits, if not already submitted during the application phase.

CIMNE is an equal opportunity employer committed to diversity and inclusion. We are pleased to consider all qualified applicants for employment without regard to race, colour, religion, sex, sexual orientation, gender identity, national origin, age, disability or any other basis protected by applicable state or local law.

CIMNE has been awarded the HRS4R label.