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NATIONAL TECHNICAL UNIVERSITY OF ATHENS

School of Mechanical Engineering, Laboratory of Machine Elements and Dynamics

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JOB TITLE	**DC POSITION IN MET2ADAPT DOCTORAL NETWORK**
INDIVIDUAL PROJECT TITLE	**DC3 - Eco-friendly Metamaterial Panels for Vibration Damping and Noise Attenuation in Sustainable Infrastructure**
HOME INSTITUTION	National Technical University of Athens (NTUA)
DEPARTMENT	School of Mechanical Engineering, Laboratory of Machine Elements and Dynamics, Athens, Greece
POSTAL OFFICE HOME	Athens, Greece
MAIN SUPERVISOR	Prof. Ioannis Kalogeris
INDUSTRIAL MENTOR	Professional from NADARA Portugal
EARLIEST START DATE	September 1st, 2026
DURATION	36 months

DC3 PROJECT DESCRIPTION

The primary objective of this project is to create high-performance, reusable metamaterial panel systems that achieve superior vibration and noise attenuation while remaining cost-effective and compatible with sustainable construction practices. The successful candidate will have a high-scoring Masters degree in Mechanical, Civil, Materials, Simulation or similar Engineering field.

OBJECTIVES

The following objectives are identified:

1) Development of a high-fidelity numerical modelling framework based on state-of-the-art multiscale finite element methods to analyse the dynamic behaviour of panels with complex microstructure. The microstructural configurations to be investigated include embedded pneumatic mechanisms in porous materials and negative stiffness inclusions for enhanced vibration attenuation.

2) Development of efficient surrogate models using machine learning algorithms to enable the rapid exploration and optimization of microstructural designs.

3) Transitioning from concept to real-world application by developing scalable and cost-efficient production methods.

PLANNED SECONDMENTS

KUL Belgium for 2 months. ETH Zürich for 2 months. Additional secondments of up to 2 months may be planned at other associated partners.

INSTITUTION DESCRIPTION AND WORKING PLACE

The National Technical University of Athens is the oldest and largest Technical University in Greece, with a total number of about 8500 undergraduate and 1500 graduate students. NTUA is currently involved in 36 H2020 projects, including 8 MSCA actions. In 4 of them NTUA is acting as a coordinator. NTUA is divided into nine academic Schools, and will participate in the programme by an interdisciplinary team of researchers from three

schools (Civil, Mechanical and Electrical Engineering) and 3 independent research units/laboratories. The School of Mechanical Engineering at NTUA was ranked 41st in Europe and 101-150 Worldwide in the 2018 QS World University Rankings.

CANDIDATE PROFILE

The ideal candidate has strong analytical and quantitative skills in computational solid mechanics, structural dynamics and finite element modelling, as well as programming experience in MATLAB and/or Python. Prior exposure to vibration control, wave propagation, metamaterials or machine-learning-based surrogate modelling is considered an asset. Good written and spoken English skills are required. We value good interpersonal skills, the ability to work in a diverse, multidisciplinary and international team, readiness to present results at international conferences, and the willingness to spend several months at partner universities and industrial partners within the project.

REQUIRED DEGREE

A Master's degree (or equivalent) in Civil Engineering, Environmental Engineering, Mechanical Engineering, or related fields.

ELIGIBILITY REQUIREMENTS

There are strict eligibility rules for the recruitment of Doctoral Candidates in Horizon Europe Marie Skłodowska-Curie Doctoral Network funded projects.

Career: Applicants must be doctoral candidates at the date of recruitment. They must have obtained a degree which formally entitles them to access a doctorate and they must not have already been awarded a doctoral degree. A PhD degree in any field is not compatible with this DC position.

Mobility (transnational): Transnational mobility is an essential requirement. Applicants may be of any nationality and any age, but they must not have resided or carried out their main activity (work/study) in Greece for more than 12 months in the 36 months immediately before the recruitment date.

Secondments: Applicants must be prepared to undertake transnational mobility during the project of up to 8 months.

REQUIRED SKILLS/QUALIFICATIONS

We are seeking a motivated and talented PhD candidate with a Master's degree (or equivalent) in Civil Engineering, Mechanical Engineering or a closely related discipline. Proficiency in MATLAB and/or Python is required, as the research will involve numerical modeling, simulation, and data analysis. Good communication skills in English and ability to understand and express in both written and spoken English are compulsory.

PREFERRED SELECTION CRITERIA

The ideal candidate is passionate about computational mechanics, structural dynamics and composite material modelling. A strong background or interest in vibration mitigation, or metamaterials will be highly appreciated. Experience with finite element modeling and vibration laboratory testing will be considered a valuable asset. Enthusiasm for research, together with the ability to work both independently and collaboratively, are essential qualities for this position.

EVALUATION AND INTERVIEW

The selection of suitable candidates will be performed by members of the Recruitment Committee (RC) of the Network. Emphasis will be placed on education, experience, and personal and interpersonal qualities. Motivation, ambition, and potential will also be considered.

After verifying eligibility, CVs, motivation statements, and track records of eligible applicants will be evaluated. A shortlist of candidates will be interviewed online. The highest-ranked candidate will be offered the position.

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EMPLOYMENT CONTRACT AND REMUNERATION

The selected candidate will be appointed under a 36-month full-time employment contract with full social security and fiscal coverage, as foreseen by Greek national legislation.

Gross annual remuneration (DN-MSCA Horizon Europe 2024 rates):

- Living allowance: €41,768.16 (including country-specific correction coefficient for Greece)
- Mobility allowance: €8,520
- Family allowance (if eligible): €5,940

These gross amounts include all compulsory deductions under national applicable legislation.

SPECIFIC DUTIES AND RESPONSIBILITIES

Doctoral candidates do research while being guided by supervisors and at the same time fulfill a PhD training program. The goal is to complete the doctoral education and to obtain a doctoral degree from NTUA. They will be required to:

- Attend the project-wide training program with the other DCs candidates and all other project events.
- Perform the secondments.
- Attend the PhD courses, successfully complete and submit a PhD thesis before the project ends.

EXPECTED PhD DEGREE

PhD degree from the School of Mechanical Engineering, National Technical University of Athens

HOW TO APPLY – DOCUMENTATION

The applicant should provide the following documentation:

- The Application Form duly completed.
- A Curriculum Vitae signed and dated, preferably in Europass format, including education, work experience, a complete list of publications (if any) and/or participation to scientific meetings, and previous scientific experiences.
- A letter of motivation, including research interests and reasons for applying for this programme.
- A research proposal with reference to the specific DC3 position (max 1000 words), articulated as follows: state of the art; goals; methodology; expected results; implementation times; references.
- Copy of university diplomas and study certificates (including Transcripts of records, grades and university courses).
- Name and contacts of 2 referees (at least 1 academic) with reference letters in English.
- English Language Certificates (if available).

HOW TO APPLY – LINKS AND FURTHER INFORMATION

Please e-mail Prof. Ioannis Kalogeris at ikalogeris@mail.ntua.gr