

Annex 01 – MPHS

Scientific Sector	MATH-03/A Mathematical Analysis
Duration of contract (max 24 months):	24 months
Profile of the researcher to be hired	The candidate should be a researcher with experience in partial differential equations, evolution problems, free boundaries and form optimization with applications to engineering and physics. He or she should have some skills in theoretical and computational analysis of mathematical complex models and in particular in the study of spectral problems involved in fluid dynamics or in the study of advanced materials. An experience abroad of at least three months working at interdisciplinary projects is required.
Description of the project the researcher will work on	<p>Title: Free boundary problems and form optimization in engineering and applied physics.</p> <p>Objectives to achieve: The project aims to study, from a theoretical and a numerical point of view, free boundary and shape optimization problems with applications to engineering and physics. The goal is to develop new mathematical methods to model and control moving interfaces and to apply them to optimal design, fluid dynamics and smart materials.</p> <p>Methodology: A combined theoretical and computational approach involving:</p> <ul style="list-style-type: none"> • analysis of qualitative PDEs governing interface problems • development of numerical algorithms for form optimization in complex domains <p>Alignment with the PNRR objectives: This project is consistent with PNRR Mission 4 'Education and Research', Section 2 'From Research to Industry', Investment 1.2, since it deals with technological innovation and knowledge transfer. The project complies with the DNHS principle.</p>