Physique Pour la Médecine
Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris, ESPCI ParisTech
Institut National de la Santé et de la Recherche Médicale INSERM U1273
Centre National de la Recherche Scientifique CNRS UMR 8063
Université Paris Sciences et Lettres PSL

PhD student in ultrasound therapy

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Position	PhD student
Duration	3 years
Missions	Deep vein thrombosis (DVT) is a common pathology associated with serious complications, including post-thrombotic syndrome (PTS) and chronic venous insufficiency which has greatly improved the quality of life of patients. Our team has recently developed an innovative ultrasound approach to destroy the thrombus in a completely non-invasive way by focusing short and intense ultrasound pulses on the region to be treated. The thesis aims to develop this new technology up to clinical application, to validate it in vitro and in vivo and to carry out the first clinical proof of concept on patients with DVT. Within a multidisciplinary team composed of physicists, engineers and medical doctors, the PhD student will propose and develop novel algorithms for focusing, real-time ultrasound imaging guidance, and robotic positioning, validate the developed technology on in vitro and in vivo models, and finally participate to the clinical demonstration.
Main activities	- Analyze the literature and the state of the art in the field of research - Design novel focusing/guiding/positioning algorithms - Design experimental plans and demonstrations - Write test plans and reports - Perform experimental validations - Analyze results and evaluate performance - Communicate the results in scientific articles and conferences
Knowledge	- Wave physics (ultrasound) - Programming (matlab/python) - Measurements and instrumentation - Image processing - Robotics
Know-how	- Ability to conduct experimental work - Ability to work in a multidisciplinary team - Ability to ensure the integration of hardware, software and systems, - Creativity / sense of innovation - Proficiency in english
Degree	Master/Engineer's degree in acoustics, biomedical engineering, physics, electronics, robotics
Salary	2046 euros/brut