Master 2: ***International Centre for Fundamental Physics***

INTERNSHIP PROPOSAL

Laboratory name: WAINVAM-E
Internship director'surname: Beato
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Web page: https://wainvam-e.com/
Internship location: Ploemeur, Bretagne (56)

Thesis possibility after internship: ~~YES~~/NO
Funding: YES/NO If YES, which type of funding:

Development and optimization of an NV magnetometer

The company:
WAINVAM-E bridges the gap between high-potential academic research and marketable technology solutions. We specialize in developing quantum sensors based on spin manipulation of nitrogen-vacancy (NV) color diamond centers. These spins are very sensitive sensors for nanoscale magnetic field allowing the design of magnetic resonance imaging devices at molecular scale. By developing metrology solutions using highly sensitive measurement tools and innovative data inversion models, WAINVAM-E provides better diagnostics and control techniques for industrial and biomedical applications.

The project:
An NV center is a type of crystalline defect of the diamond with particularly interesting physical properties. Under optical pumping by a laser, it allows among other things a very sensitive measurement of magnetic fields. Our team is currently developing a magnetometer based on this principle, for various non-destructive control applications. The trainee will therefore participate in the development of the magnetometer.
Depending on the progress of the project, the missions will be organized around the experimental optimization of the sensor. Modelling work (physical, optical) can also help with this optimization.
The trainee will be able to rely on the help of the team's various engineers to carry out its work. He/she will also participate in the transverse tasks of WAINVAM-E's research and development team: bibliographical watch, progress meetings, reports... He/she might also be in contact with academic laboratories and companies in France or abroad.

The candidate:
We are looking for a motivated candidate with a Bachelor's degree or a master's degree in physics, with a good knowledge of instrumentation and optics, as well as notions of atomic physics. Computer developments (modeling/instrumentation) will be mainly done under Python, a knowledge of this language would be a plus.
Curiosity, rigour, creativity and the ability to evolve in a multidisciplinary environment are expected. Good communication skills are essential.

Please, indicate which speciality(ies) seem(s) to be more adapted to the subject:

Condensed Matter Physics: ~~YES~~/NO Soft Matter and Biological Physics: ~~YES~~/NO
Quantum Physics: YES/~~NO~~ Theoretical Physics: ~~YES~~/NO