Several PhD (1) and Postdoctoral (2) positions are available in the Ultrafast Science of Quantum Materials group at IMDEA Nanoscience in Madrid, Spain.

Available positions:

1. 2-year postdoctoral position exploring light-induced metastable phases in manganites, to begin as soon as possible (ending December 2024). The postdoctoral fellow will be responsible for **generating "hidden" quantum phases in strain-tuneable manganite** samples and uncovering the factors that stabilize these novel phases. Candidates must have experience in experimental ultrafast optics and/or spectroscopy of quantum materials.
2. One PhD position examining the **ultimate speed limits of structural phase transitions** triggered with light, and examining how these effects - which can be considered the most non-perturbative nonlinear optical effects possible - can be leveraged for **novel pulse shaping and characterization**. A solid background in optics, ideally ultrafast optics, is strongly desirable.
3. 2-year postdoctoral position in coherent X-ray imaging of light-induced phase transitions, flexible start date. Recently we have demonstrated this technique can imaging out-of-equilibrium phases with nanometer spatial and femtosecond temporal resolution. The fellow will **lead experiments to image light-driven phase dynamics in 2D** materials and in superconductors. Experience in coherent imaging and experiments at large scale facilities, together with python programming, is essential.

We especially invite applications from underrepresented groups in physics. Please include a CV and two references (one for PhD applicants), and contact the group leader, "Ramon y Cajal" researcher Dr. Allan Johnson at allan.johnson@imdea.org. Informal queries are also appreciated.

About the group: The Ultrafast Science of Quantum Materials group at IMDEA Nanoscience in Madrid, Spain studies light-driven phenomena in quantum materials, particularly phase transitions and the out-of-equilibrium phases using a variety of laboratory and facility-based experiments. Travel opportunities to Japan, Korea, Switzerland and Germany are expected for all projects in the USQM group. Based in the north of Madrid at the Campus of International Excellence UAM+CSIC, IMDEA Nanoscience is dedicated to the exploration of nanoscience and the development of applications of nanotechnology in connection with innovative industries.

Relevant recent publications

1. A.S. Johnson *et al.,* arXiv:2202.08585 (2022)
2. A.S. Johnson *et al.,* Science Advances 7 (33), eabf1386 (2021)
3. D Perez-Salinas, AS Johnson, D Prabhakaran, S Wall. Nature Comms. 13, 1-8 (2022)
4. A.S. Johnson *et al.,* Physical Review Letters (in press 2022)
5. AS Johnson *et al.,* Science advances 4 (5), eaar3761 (2018)