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Time-resolved imaging spectroscopy of nanoscale phase dynamics in quantum materials

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Quantum materials host exotic properties that make them highly desirable for applications, but the complex internal interactions that lead to these properties also make them difficult to understand. Ultrafast spectroscopy is a promising route to disentangle the important degrees of freedom in such materials, but spontaneous phase separation and other nanoscale dynamics mean both temporally and spatially resolved measurements are key to understand these systems. Here I present recent results using coherent X-ray imaging at free electron lasers to build up complete temporal, spatial, and spectral maps of nanoscale phase separation in the prototypical light-induced phase transition of vanadium dioxide.

About the speaker:
Allan Johnson is a PROBIST postdoctoral fellow in the Ultrafast Dynamics of Quantum Materials group at ICFO in Barcelona. Previously he was a Marie Skłodowska Curie PhD fellow and NSERC PGSD grant holder at Imperial College London, where he obtained his PhD for the development of new attosecond X-ray laser sources and spectroscopies. Most recently he has been awarded a "La Caixa" junior leader fellowship to begin a research group studying the coherent control of quantum materials.

Presenter: Dr JOHNSON, Allan (ICFO, Spain)

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