Simposio de Tecnologías Cuánticas

Quantum Technologies Symposium

Madrid, 21 y 22 de noviembre de 2018 / November 21-22 2018

ABSTRACT

Quantum Thermometry: the art of estimating very low temperatures

Anna Sanpera

What is a quantum thermometer? Why it is so notoriously difficult to measure ultra low temperatures with high precision? Are there fundamental limitations for this fact? Is local versus global thermometry a possible strategy to improve accuracy? Do measurements irremediable hamper the accuracy of the estimation? These and closely related questions are of paramount importance in our quest for quantum technologies and forces us to look into novel schemes, some of them, quite counterintuitive, to provide tight bounds on quantum thermometry. Non equilibration, strong coupling, entanglement between the probe and sample and open systems dynamics are some of the tools needed to reach accuracy limits when dealing with quantum systems at very low temperatures.