

Progetto	Ultrafast optical manipulation of magnetisation
Esperimento / sigla proponente	QUAX
Laboratorio ospitante	LNL
Contact person presso il laboratorio	Antonello Ortolan
Periodo previsto:	Luglio 2021 – Dicembre 2021
Sezioni e tutor proponenti:	PD-Caterina Braggio; LNL-Antonello Ortolan
Descrizione attività (max 1000 caratteri)	<p>The cavity magnon-polariton (CMP) is a hybrid quasi-particle arising from the coupling between photons and magnon, the quanta of spin waves. This hybrid system is realised in microwave cavities hosting magnetised samples, wherein the strength of the interaction between the subsystems (the cavity photons and the magnetic material excitations) is increased to such an extent that they can no longer be considered as separate entities.</p> <p>In our laboratory, we have demonstrated an all-optical method for manipulating the magnetization of a small yttrium-iron-garnet (YIG) sphere placed inside a microwave cavity, under the conditions of strong coupling [1]. More recently, we accomplished excitation of CMP modes using picosecond laser pulses, and our recorded data display oscillations that might be attributed to classical magnon-Rabi oscillations. We now plan to implement a coherent and dynamic control over the cavity magnon-polariton modes as in Reference [2], but with the advantages of the optical excitation. In the thesis work the student will contribute to the measurements, the related data analysis and to the development of a model for the physical system under study, that takes into account the direct excitation of the magnetic component.</p> <p>[1] C Braggio et al, PRL 118, 107205 (2017) [2] T Wolz et al, Comm. Phys. 3, Article number: 3 (2020)</p>
Altre indicazioni: (max 500 caratteri)	
Facility che il laboratorio ospitante mette a disposizione	Foresteria se possibile accesso; mensa
Note:	