

Topological interactions mediated by Hermitian and non-Hermitian topological light

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Topology and quantum optics are two fields whose interplay can give rise to new physics [1]. Fractional decay in a topological continuum and topological dependent atom-atom interactions mediated by topological light are just few examples of a plethora of unconventional phenomena [2]. In parallel to this, non-Hermitian Hamiltonians, often used to describe nanophotonic platforms [3], have been shown to possess topological properties with no Hermitian counterpart [4]. In this talk I will present the relation between the Hermitian (or non-Hermitian) topology of a photonic lattice and the topological nature of the atom-atom Hamiltonian mediated by such lattice.

[1] <https://www.benasque.org/2021tmqo/>

[2] M. Bello, G. Platero, J. I. Cirac, A. González-Tudela. *Sci. Adv.* 2019

[3] F. Roccati, S. Lorenzo, G. Calajò, G. M. Palma, A. Carollo, F. Ciccarello. *Optica* 2022

[4] E. J. Bergholtz, J. C. Budich, F. K. Kunst. *Rev. Mod. Phys.* 2021