

SFB 1432

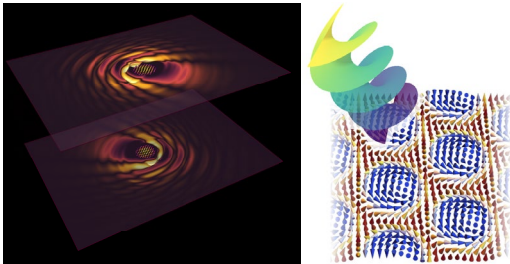
# Colloquium

Thu Apr, 27  
Talk at 15:15  
in P 603



**Dr. Sebastián A. Díaz**

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## Periodic drive and topology link textures and magnons

The magnetization field in solids can develop static structures with nontrivial topology that when coupled to a time-periodic drive support novel magnonic excitations. I will present our theoretical investigation of two platforms where topological magnetic textures and magnons can be controlled. In the first platform, a skyrmion-antiskyrmion bilayer forms a topological charge dipole when excited by in-plane AC magnetic fields and acts as an efficient spin-wave antenna [1]. In the second platform, high-frequency laser irradiation on multiferroic insulators induces off-resonance skyrmion motion and a Floquet magnonic topological transition in a laser-driven skyrmion crystal [2]. Finally, I will discuss our recent proposal to exploit AC electric fields in frustrated magnets to construct a magnetic soliton with nontrivial topology in spacetime. Our findings envisage the periodic driving of topological magnetic textures as a promising method to engineer spin waves for magnonics and to construct topological magnetic solitons in spacetime.

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[1] S.A. Diaz, T. Hirose, D. Loss and C. Psaroudaki, *Nano Lett.* 20, 6556 (2020)

[2] T. Hirose, J. Klinovaja, D. Loss and S.A. Diaz, *Phys. Rev. Lett.* 128, 037201 (2022)

