

# On-line SPICE-SPIN+X Seminars



**Wednesday, 23rd June 2021, 15:00 (German Time)**

The seminar will be via Zoom ([Meeting ID: 895 9036 5380](#)) and live streamed in the SPICE YouTube Channel.



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## **Spin And Charge Transport In Antiferromagnets**

Antiferromagnets have attracted interest for use of their spin-dependent transport properties in electronic devices [1,2]. Towards this end, determining the characteristic lengths promoting spin dependent transport as well as understanding how antiferromagnetic spin structures [3,4] and spin textures [5,6] influence transport are some of the basic points that deserve to be investigated.

In this talk, I will first discuss experiments of spin injection and propagation in antiferromagnets. I will show how we demonstrated experimentally [7] the theoretical prediction [8] of the interplay between linear spin fluctuations and the spin mixing conductance, therefore opening perspectives for studies of critical phenomena in thin films of antiferromagnets. In search of non-linear spin fluctuations [9], I will then detail how we found experimental evidence of an overlooked effect: self-induced spin-charge conversion in the ferromagnetic spin-injector, corroborating the results of first-principle calculations [10]. Beyond extrinsic scattering, recent experimental findings relating to the interplay between the antiferromagnetic order and crystal symmetries [4] will be briefly announced.

In a second part, I will introduce a stimulating example of how antiferromagnets and superconductors [11] may envision a common future by showing how we inferred essential information using Cooper pair transport through antiferromagnets [12].

Finally, in search of the nucleation of skyrmions in antiferromagnets to study the associated spintronic effects, I will show how we took advantage of the exchange bias interaction between an antiferromagnet and an adjacent ferromagnet to stabilize several types of spin textures at the interface of the antiferromagnet [6,13,14].

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