



## Sonderforschungsbereich 1277

Emergent Relativistic Effects in Condensed Matter -  
From Fundamental Aspects to Electronic Functionality



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### SFB – Colloquium

Speaker: **Prof. Dr. Yaroslav Tserkovnyak**

University of California, Los Angeles

Date: Tuesday, 06 December 2022, 14:15, H34

Topic: Integration of quantum color centers with  
spintronic systems

Abstract:

Optically-accessible color centers, such as nitrogen-vacancy impurities in diamond, have proven to be invaluable probes not only of static magnetic fields but also magnetic noise. The corresponding probing modality, called magnetic relaxometry, has now been successfully employed to study nonlinear dynamics, topological textures, spin transport, and phase transitions in magnetic systems. Taking it to the next level, we study correlated dissipative dynamics of multiple color centers in proximity to a magnetic heterostructure. Beyond potentially enriching their sensing capabilities, this opens a new way for inducing quantum entanglement among color centers by controlling their shared dissipative environment, as well as resulting in emergent dynamic phase transitions and other collective behavior that can now be potentially tailored by established spintronic means.

Host: Prof. Dr. Milena Grifoni