

# Theory of Condensed Matter: Hard Condensed Matter

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Galilei room, Staudinger Weg 9, 01-128, 1st floor

Yuta Yamane  
JGU Mainz

## **Effective forces in ferromagnets -spinmotive force, anomalous Hall effect, and domain wall resistance**

In ferromagnetic metals, the strong exchange coupling of the conduction electron with the local magnetization allows us to adopt an adiabatic approximation, in which the subspaces for the majority and minority electrons become independent but with a gauge field coming into a play. The gauge field is spin-dependent and known to cause nontrivial electromotive force and anomalous Hall effect. In this talk, by taking into account the non-adiabatic spin dynamics and the spin-orbit coupling, we will see that there can appear an additional electromotive force and domain wall resistances.

JGU Mainz