

## Seminar : Simon Lenne

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### Separation of spin-orbit torque and thermal effects in Mn<sub>2</sub>RuGa



There is growing interest in discovering new materials with strong spin-orbit torque (SOT), leading to the study of a wider range of magnetic materials. The harmonic Hall method is a commonly used technique for SOT measurement. However, this method is unable to distinguish between the Nernst effect and SOT. To address this, I developed an extension of the harmonic Hall method which allows for the accurate separation of Nernst and SOT effects. By simultaneously recording and analysing both the longitudinal and transverse signals, this method enables clear and precise separation of the SOT and the anomalous Nernst signals. Furthermore, the numerical implementation of this method enables the study of samples with a more complex anisotropy, such as Mn<sub>2</sub>RuGa. This approach allows for efficient measurement of SOT, even when signals are small or dominated by the Nernst effect. As a result, a greater diversity of potential materials can be analysed with accuracy.

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