



量子物理学・ナノサイエンス第 366 回セミナー

Antiferromagnetic Spintronics: Spintronics without magnetic fields

講師 : Professor Mathias Kläui

Johannes Gutenberg-University Mainz, Germany
Centre for Quantum Spintronics, NTNU, Norway
IEEE Magnetics Society Distinguished Lecturer
2020/2021

日程 : 6月7日(水) 10:30 - 11:30

場所 : 本館2階 290 物理学系輪講室

概要

While known for a long time, antiferromagnetically ordered systems have previously been considered, as “interesting but useless”. However, since antiferromagnets potentially promises faster operation, enhanced stability and higher integration densities, they could potentially become a game changer for new spintronic devices. Here I will show how antiferromagnets can be used as active spintronics devices by demonstrating the key operations of “reading” [1], “writing” [2], and “transporting information” [3] in antiferromagnets. Beyond typical bulk and thin film systems, recently also antiferromagnetic van der Waals materials have been discovered [4], which bode particularly well for manipulation by efficient interface effects.

[1] S. Bodnar *et al.*, Nature Commun. **9**, 348 (2018); L.

Baldrati *et al.*, Phys. Rev. Lett. **125**, 077201 (2020)

[2] L. Baldrati *et al.*, Phys. Rev. Lett. **123**, 177201

(2019); H. Meer *et al.*, Nano Lett. **21**, 114 (2020); S. P.

Bommanaboyena *et al.*, Nature Commun. **12**, 6539

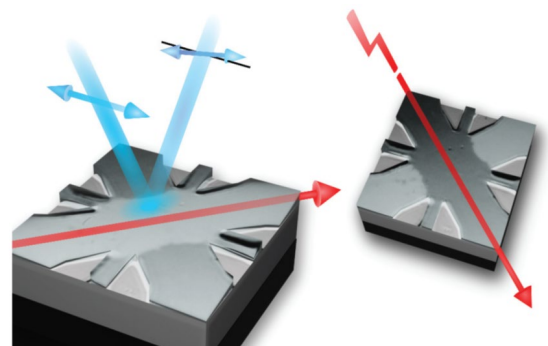
(2021);

[3] R. Lebrun *et al.*, Nature **561**, 222 (2018). R. Lebrun

et al., Nature Commun. **11**, 6332 (2020). S. Das *et al.*,

Nature Commun. **13**, 6140 (2022).

[4] R. Wu *et al.*, Phys. Rev. Appl. **17**, 064038 (2022).



ご来聴を歓迎いたします。

連絡教員 村上 修一 (内線 2747)