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

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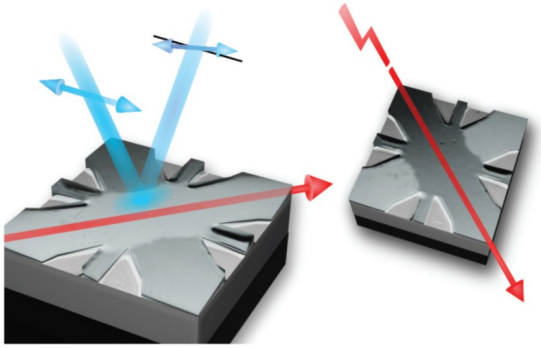
場所　：　本館 2 階 290 物理学系輪講室

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).



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