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Efficient Control of 2D Magnetism

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The recently discovered magnetic two-dimensional (2D) van der Waals materials [1, 2] provide ideal platforms to enable the atomic-thin, flexible, lightweight magneto-optical and magnetoelectric devices. Though many have hoped that the ultra-thinness of 2D magnets should allow an efficient control of magnetism, the state-of-the-art has not achieved notable breakthroughs to this end, with only proof-of-concept reports. There appear to be some fundamental obstacles for efficient control. In this talk, I will analyze the challenges and present our recent theoretical and experimental progress on efficient electrical and optical control of 2D magnetism [3-5]. We envision the efficient control of 2D magnets could open new avenues for the low-power spintronics and photonics.

1. C. Gong et al. *Nature* 546, 265-269 (2017).
2. C. Gong, X. Zhang. *Science* 363, eaav4450 (2019).
3. C. Gong, et al. *Nature Communications* 10, 2657 (2019).
4. S.-J. Gong, et al. *PNAS* 115, 8511-8516 (2018).
5. E.-W. Du, et al. *Nano Letters* 20, 7230-7236 (2020).