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Triangular van der Waals topological magnet $Co_{1/3}$-TaS_2

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2D magnets, particularly van der Waals magnets, have been attracting much attention worldwide since they were first reported by a series of papers in 2016 [1, 2]. Over the past few years, much of the attention has been on discovering new materials with novel ground states, and the current focus is on topological magnets. Antiferromagnetic metallic Co1/3-TaS2 is the latest addition to this new class of 2D magnets [3]. It exhibits a considerable anomalous Hall effect (AHE), which was recently assigned to a rather unusual form of 3Q tetrahedral structure, a highest-density Skyrmion phase [4]. We also found that this 3Q phase is extremely sensitive to external variables like Co concentration and drastic Fermi surface change [5, 6]. As another demonstration of this controllability, we demonstrated that the ground state can be changed dramatically by controlling carrier density via gating.

References:

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