Proximate spin liquids

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Quantum spin liquids are exotic states characterized by persistent spin dynamics, long-range entanglement, and absence of magnetic order. There is significant interest in stabilizing such states experimentally, but recent research shows that only proximate spin-liquid behavior is usually realized in solid-state materials. In this talk, I will review several material candidates studied in the context of Kitaev magnetism on the honeycomb lattice. Experimental signatures of the proximate spin-liquid behavior and recent attempts of fine-tuning these materials toward the genuine spin-liquid regime by pressure [1,2] and magnetic field [3,4] will be presented.

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[2] P. Sakrikar *et al. Nature Comm.* **16**, 4712 (2025)

[3] S. Bachus *et al. Phys. Rev. Lett.* **125**, 097203 (2020)

[4] P. Mukharjee *et al. Phys. Rev. B* **110**, L140407 (2024)