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Signatures of fractionalization from inter-layer transport SHUBHAYU CHATTERJEE, Harvard University, SIDDHARDH MORAMPUDI, MPIPKS Dresden, YOCHAI WERMAN, EREZ BERG, Weizmann Institute of Science — Quantum spin liquids are unconventional insulating phases beyond the symmetry breaking paradigm with the prominent presence of fractionalized excitations. Due to the lack of distinguishing local order parameters, experimental signatures of such states are highly sought after. Many candidate materials for spin liquid states are layered quasi-2d materials, where each 2d layer is believed to have deconfined fractionalized excitations. We show that a signature of such excitations can be found by looking at the characteristics of in-layer versus inter-layer thermal transport in these materials, where distinct features arise reflecting the fact that the excitations are fractionalized. We also discuss how various forms of disorder influence the thermal conductivity.

Shubhayu Chatterjee
Harvard University

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