Identifying Quantum Spin Liquids:  
Where is the Smoking Gun?”

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Friday, April 5, 2024, Time: 3:30PM

Since Anderson’s postulate of a highly entangled spin liquid state in a frustrated magnetic system, there have been claims of many candidate systems where such states are realized. Many such claims rely on the simple absence of magnetic order down to the lowest temperatures in these systems which nevertheless possess inherent strong exchange interactions. I will try to review the various other experimental bases for such claims and place those in the context of our own recent work on two candidate systems, a-RuCl3 and a new cousin of the much-studied compound Herbertsmithite, which we term YCOB.