Algebraic spin liquids with emergent generalized gauge boson excitations ALEX RASMUSSEN, CENKE XU, ZHEN BI, YI-ZHUANG YOU, Univ of California - Santa Barbara — According to an early proposal by Hermele, et.al., (cond-mat/0404751), an algebraic spin liquid state with gapless emergent photon excitations can exist in quantum spin ice systems. This algebraic spin liquid is stable against any weak perturbation. Futher work by Xu and Ho?ava (arxiv:1003.0009) concluded that certain lattice models give rise to more exotic stable spin liquid states with graviton-like excitations. In this talk we will show how these algebraic spin liquid states can be generalized to even more exotic types of gapless excitations and then demonstrate that these new phases are stable against weak perturbations.

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