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Mott transition between a spin-liquid insulator and a metal in three dimensions DANIEL PODOLSKY, ARUN PARAMEKANTI, YONG BAEK KIM, University of Toronto, T. SENTHIL, Massachusetts Institute of Technology — We study a bandwidth controlled Mott metal-insulator transition (MIT) between a Fermi liquid metal and a quantum spin-liquid insulator at half-filling in three dimensions (3D). Using a slave rotor approach, and incorporating gauge field fluctuations, we find a continuous MIT and discuss the finite temperature crossovers around this critical point. We show that the specific heat $C \sim T \ln \ln(1/T)$ at the MIT and argue that the electrical transport on the metallic side near the transition should exhibit a 'conductivity minimum' as a function of temperature. A possible candidate to test these predictions is the 3D spin liquid insulator $Na_4Ir_3O_8$ which exhibits a pressure-tuned transition into a metallic phase. We also present the electron spectral function of $Na_4Ir_3O_8$ at the transition.

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