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Title:	Heat capacity evidence for proximity to the Kitaev quantum spin liquid in A2 IrO3 (A=Na, Li) HEATHeat capacity evidence for proximity to the Kitaev quantum spin liquid in A2 IrO3 (A=Na, Li)
Authors:	Mehlawat, K. (/jspui/browse?type=author&value=Mehlawat%2C+K.) Singh, Yogesh (/jspui/browse?type=author&value=Singh%2C+Yogesh)
Keywords:	iridates A2IrO3 (A=Na, Li) Kitaev quantum spin liquid
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Abstract:	The honeycomb lattice iridates A2IrO3 (A=Na, Li) are candidates for realization of the Kitaev-Heisenberg model although their proximity to Kitaev's quantum spin liquid (QSL) is still debated. We report on heat capacity C and entropy Smag for A2IrO3 (A=Na, Li) in the temperature range 0.075≤T≤155 K. We find a well-separated two-peak structure for the magnetic heat capacity Cmag for both materials and Smag for Na2IrO3 shows a shoulder between the peaks with a value close to 12Rln2. These features signal the fractionalization of spins into Majorana fermions close to Kitaev's QSL [J. Nasu, M. Udagawa, and Y. Motome, Phys. Rev. B 92, 115122 (2015); Y. Yamaji, T. Suzuki, T. Yamada, S. I. Suga, N. Kawashima, and M. Imada, Phys. Rev. B 93, 174425 (2016)]. These results provide the first thermodynamic evidence that A2IrO3 are situated close to the Kitaev QSL. Additionally we measure the high-temperature T≤1000-K magnetic susceptibility χ and estimate the Weiss temperature θ in the true paramagnetic state. We find θ≈-127 and -105 K, for Na2IrO3 and Li2IrO3, respectively suggesting that magnetic energy scales for the two materials could be very similar.
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