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Title:	Relevance of the Heisenberg-Kitaev model for the honeycomb lattice iridates A2IrO3
Authors:	Singh, Yogesh (/jspui/browse?type=author&value=Singh%2C+Yogesh)
Keywords:	Curie-Weiss temperature Functional renormalization group
Issue Date:	2012
Publisher:	American Physical Society.
Citation:	Physical Review Letters, 108 (12), art. no. 127203, .
Abstract:	Combining thermodynamic measurements with theoretical calculations we demonstrate that the iridates A2IrO3 (A=Na, Li) are magnetically ordered Mott insulators where the magnetism of the effective spin-orbital $S=1/2$ moments can be captured by a Heisenberg-Kitaev (HK) model with interactions beyond nearest-neighbor exchange. Experimentally, we observe an increase of the Curie-Weiss temperature from $\theta=125\text{K}$ for Na 2IrO3 to $\theta=33\text{K}$ for Li2IrO3, while the ordering temperature remains roughly the same $T_N \approx 15\text{K}$. Using functional renormalization group calculations we show that this evolution of θ and T_N as well as the low temperature zigzag magnetic order can be captured within this extended HK model. We estimate that Na2IrO3 is deep in a magnetically ordered regime, while Li2IrO3 appears to be close to a spin-liquid regime.
Description:	Only IISERM authors are available in the record.
URI:	http://prl.aps.org/abstract/PRL/v108/i12/e127203 (http://prl.aps.org/abstract/PRL/v108/i12/e127203)
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