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**Exotic phases in Mott insulating Iridates with strong spin-orbit coupling: Phase diagram of the Kitaev-Heisenberg model in a magnetic field** HONG-CHEN JIANG, Microsoft Research, Station Q, UCSB, ZHENG-CHENG GU, Kavli Institute for Theoretical Physics, UCSB, XIAO-LIANG QI, SIMON TREBST, Microsoft Research, Station Q, UCSB — Motivated by the recent proposal of a Mott insulating state with strong spin-orbit coupling for the Iridate  $\text{Na}_2\text{IrO}_3$ [1], we discuss the collective ground states of the effective Iridium moments in the presence of Heisenberg-Kitaev exchange interactions and a time-reversal symmetry breaking magnetic field. For a field pointing in the (111) direction we find a rich phase diagram with both symmetry breaking magnetically ordered phases as well as an unconventional topological phase which is stable over a small range of coupling parameters. Our numerical simulations further indicate two exotic multicritical points at the boundaries between these ordered phases, which we will discuss.  
[1] J. Chaloupka, G. Jackeli, and G. Khaliullin, Phys. Rev. Lett. 105, 027204 (2010).

Hong-Chen Jiang  
Microsoft Research, Station Q, UCSB

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