

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Influence of non-magnetic dilution in honeycomb-lattice iridates A_2IrO_3 ($A=Na, Li$)¹ SOHAM MANNI, PHILIPP GEGENWART, I. Physikalisches Institut, Georg-August-Universitaet Goettingen, 37077-Goettingen, Germany — Honeycomb-lattice iridates A_2IrO_3 ($A= Na, Li$) display a spin-orbit Mott insulating state [1,2] and have been proposed as experimental realizations for the Kitaev-Heisenberg(KH) model[1] or a novel kind of quasi-molecular orbital(QMO) system [3]. Recently it has been proposed, that dilution of the Ir^{4+} moments could be used to investigate the importance of next neighbor interactions (HK model) versus further next neighbor interactions (J1-J2-J3 model)[4]. We have synthesized $A_2(Ir_{1-x}Ti_x)O_3$ single- and polycrystals for the Na and Li system, respectively and investigated their magnetic and thermodynamic properties. Even very low Ti^{4+} substitution leads to spin glassy behavior and spin glass temperature (T_g) is steeply suppressed towards the percolation threshold. This confirms that frustrated nearest-neighbor interactions are the most important factor to set up the magnetism in A_2IrO_3 .

- [1] Y.Singh et.al. - PRL 108, 127203 (2012).
- [2] H. Gretarsson et.al. - PRL 110, 076402 (2013).
- [3] I. Mazin et.al. - PRL 109, 197201 (2012).
- [4] Eric C. Andrade et.al. - arxiv 1309.2951.

¹We acknowledge financial support from Helmholtz Virtual Institute 521 (“New states of matter and their excitations”)

Soham Manni
I. Physikalisches Institut, Georg-August-Universitaet Goettingen,
37077-Goettingen, Germany

Date submitted: 15 Nov 2013

Electronic form version 1.4