Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Metal-Insulator Transition in $Ca_{1-x}Na_xIrO_3$ with Post-Perovskite Structure KENYA OHGUSHI, HIROTADA GOTOU, TAKEHIKO YAGI, YOKO KIUCHI, FUMIKO SAKAI, YUTAKA UEDA, Institute for Solid State Physics, University of Tokyo — We developed a novel solid solution $Ca_{1-x}Na_xIrO_3$ ($0 < x < 0.37$) with the post-perovskite structure [1, 2]. Upon carrier doping into the $S = 1/2$ antiferromagnetic Mott insulator $CaIrO_3$, the magnetic long-range order is gradually destabilized, culminating in a paramagnetic state at $x > 0.30$, with simultaneous change from the insulating to metallic behavior. The temperature dependence of the resistivity for metallic samples exhibits several characteristic features: (1) the T^α dependence with $\alpha \sim 1.2$ in the metallic range, (2) the $\ln T$ dependence in the weak-localization regime, and (3) the positive magnetoresistance violating the Kohler's rule. These results indicate the anomalous metallic state caused by the strong electron correlation effect is realized on the verge of the Mott transition. [1] Nobuyoshi Miyajima, Kenya Ohgushi, Masaki Ichihara, and Takehiko Yagi, Geophys. Res. Lett. **33**, L12302 (2006). [2] K. Ohgushi, H. Gotou, T. Yagi, Y. Kiuchi, F. Sakai, and Y. Ueda, submitted.

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Date submitted: 20 Nov 2006 Electronic form version 1.4