Contribution ID: **77** Type: **Poster**

Magnetic order induced energy-gap in Sr2IrO4

Friday, 16 September 2011 12:51 (2 minutes)

For many years the interest for transition metal oxides (TMO) has been dominated by the layered copper (3d) oxides e.g. high-temperature superconductors. With developments in sample growing technique, scientists have started to move down the periodic table. Our work focuses on the related 5d TMO, Sr2IrO4, which is expected to display a spin-1/2 Kramers doublet ground state. However, while Sr2RuO4 shows the expected metallic behaviour, Sr2IrO4 display an energy-gap at the Fermi level. Of many suggestions for the origin of this gap, only two possible suggestions remains: (1) A spin-density wave (SDW) order, or (2) A relativistic spin-orbital (SO) coupling, as recently proposed by ARPES measurements and LDA calculations. Here, we have used the power of muSR to investigate the possible presence of static magnetic order in this compound. From ZF measurements we find a long-range magnet order below Tc=240 K. Consequently, the energy-gap could most likely be deduced to the presence of magnetic ordering e.g. SDW. This also fits fits well into a recent suggestion that Sr2IrO4 could display high-temperature superconductivity upon electron doping.

Please specify poster or talk

Poster

Please specify the session

Multiple order parameter systems

Primary author: Dr MANSSON, Martin (Laboratory for Solid State Physics, ETH Zurich)

Co-authors: Dr AMATO, Alex (LMU, PSI, Switzerland); Dr ANDREICA, Daniel (Babes-Bolyai University, Romania); Dr NOZAKI, Hiroshi (Toyota Central Research and Development Labs., Japan); Prof. TERASAKI, Ichiro (Department of Physics, Nagoya University, Japan); Dr SUGIYAMA, Jun (Toyota Central Research and Development Labs., Japan); Dr KAMAZAWA, Kazuya (Toyota Central Research and Development Labs., Japan); Dr KLEIN, Yannick (IMPMC, Paris, France); Dr IKEDO, Yutaka (Toyota Central Research and Development Labs., Japan)

Presenter: Dr MANSSON, Martin (Laboratory for Solid State Physics, ETH Zurich)

Session Classification: Poster session II and lunch

Track Classification: Poster Session II (Friday)