

542nd ASRC Seminar

Date: 13:30 ~ 15:00, 24 March

Location: Meeting room 302, ASRC Building

Speaker: Prof. Takashi Kimura

(Dep. of Physics, Kyushu University)

Title: Spin transports in lateral spin valve
under a temperature gradient
or superconducting proximity effect

Spin current plays a central role in operations of spin-based nano-electronic devices.[1] Pure spin current, a flow of spin angular momentum without associating any net charge current, possesses potential to be incorporated in special functional and high-performance devices based on nonlocal spin injection. To utilize pure spin currents in practical applications, it is imperative to develop the innovative manipulation for the pure spin current together with exploring intriguing transport phenomena. In this talk, I would like to introduce our recent experimental progresses related to the thermal spin transports and superconducting spintronics. The topics of my talk are as follows.

- Importance of the heat current in lateral spin valves [2,3]
- Optimization of device and band structures for efficient thermal spin injection [4,5]
- Nano-pillar-based nonlocal device structure for generating giant pure spin current [6]
- Spin current reflection at the superconductor/normal metal interface [7]

If we have time, I want to introduce the experimentally finding

[1] Spin current, Oxford University Press, S. Maekawa, S. Valenzuela, E. Saitoh and T. Kimura

[2] S. Hu and T. Kimura, Phys. Rev. B 87, 014424 (2013)

[3] C. Mu, S. Hu, Wang and T. Kimura, Appl. Phys. Lett. 103, 132408 (2013)

[4] S. Bakaul, S. Hu and T. Kimura Phys. Rev. B 88, 184407 (2013)

[5] S. Hu, H. Itoh. and T. Kimura, Submitted

[6] S. Nonoguchi, T. Nomura and T. Kimura, Appl. Phys. Lett. 100, 132401 (2012)

[7] K. Ohnishi, Y. Ono and T. Kimura, Submitted

<Contact>

Michiyasu Mori (81-3508)

Advanced Science Research Center