



### Seminar

## Cavity opto-magnonics

# Koji Usami

Research Center for Advanced Science and Technology, The University of Tokyo



**Time: 4:30pm, Oct. 26, 2017 (Thursday)**

**时间: 2017年10月26日 (周四) 下午4:30**

**Venue: Room W563, Physics building, Peking University**

**地点: 北京大学物理楼, 西563会议室**

### Abstract

Quantum magnonics [1] links the well-developed quantum coherent control to the blooming field of magnonics. The unique properties of a long-lived magnons in yttrium iron garnet (YIG) offer new possibilities in the field of quantum electronics, too. Here, we report our activities on opto-magnonics with YIG. In particular we present the experiment in which the coherent and bidirectional conversions between microwave and optical photons via ferromagnetic magnons is realized [2]. We also discuss the result of cavity opto-magnonics, where magnons in a spherical YIG crystal interact with photons in a whispering gallery mode supported by the same crystal [3].

#### References:

- [1] Y. Tabuchi, *et. al.*, C. R. Physique **17**, 729 (2016).
- [2] R. Hisatomi, *et. al.*, Phys. Rev. B **93**, 174427 (2016)
- [3] A. Osada, *et. al.*, Phys. Rev. Lett. **116**, 223601 (2016)

### About the speaker

#### Education:

1995-1999 Bachelor of Science in Applied Physics from Nagoya University  
1999-2001 Master of Science in Physics from Tokyo Institute of Technology  
2001-2004 Ph.D. in Physics from Tokyo Institute of Technology

#### Academic appointments:

2001-2004 Research Assistant (Japan Science and Technology Agency)  
2004-2005 Researcher (Japan Science and Technology Agency)  
2005-2009 Principal Investigator (Japan Science and Technology Agency)  
2008-2009 Visiting Researcher at Niels Bohr Institute, Denmark  
2009-2011 JSPS Postdoctoral Fellow for Research Abroad at Niels Bohr Institute, Denmark  
2011-2013 Research associate professor at Niels Bohr Institute, Denmark  
2013- Associate professor at the University of Tokyo