Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Propagating spin waves in YIG micro-channel on Silicon JILEI CHEN, PING CHE, SA TU, Fert Beijing Research Institute, School of Electronics and Information Engineering, Beihang University, Beijing, China, YAN ZHANG, JUN QIN, LEI BI, State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, China, CHUANPU LIU, ZHIMIN LIAO, DAPENG YU, State Key Laboratory for Mesoscopic Physics, School of Physics, Peking University, Beijing, China, HAIMING YU, Fert Beijing Research Institute, School of Electronics and Information Engineering, Beihang University, Beijing, China, FERT BEIJING RESEARCH INSTITUTE TEAM, UNIVERSITY OF ELECTRONIC SCIENCE AND TECHNOLOGY OF CHINA TEAM, PEKING UNIVERSITY COLLABORATION — Recently the utilization of spin waves in the field of information processing has been widely developed because it is free of Joule heat dissipation and beneficial to miniaturization of the magnon based devices. Here we study spin waves in yttrium iron garnet (YIG) with a low damping property. The YIG film is fabricated on silicon substrate using pulsed laser deposition and the measured FMR linewidth is only a few Gauss. Using ebeam lithography, we are able to pattern the YIG film into a micro-channel and integrate sub-meter waveguides to generate and detect spin waves of wavelength down to 1μm or below. We show results of propagating spin waves in the YIG micro-channel measured by the S_{12} parameter of the vector network analyzer.

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Date submitted: 06 Nov 2015 Electronic form version 1.4