



復旦大學

Fudan University



复旦大学物理系物质科学报告

Physics Department Colloquium

**Autonomous and Non-Autonomous
Dynamics of Spin Hall Auto-Oscillators**

Prof. Andrei Slavin

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Abstract: Pure spin currents have been used to suppress noise caused by thermal fluctuations in magnetic nano-devices, amplify propagating magnetization waves, and to reduce the dynamic damping in magnetic films. However, generation of coherent auto-oscillations by pure spin currents has been elusive. Here we demonstrate that generation of single-mode coherent auto-oscillations is possible in a device that combines local injection of a pure spin current with enhanced spin-wave radiation losses. Counter-intuitively, radiation losses lead to the suppression of the nonlinear processes that prevent auto-oscillation by redistributing the energy of the spin current between the different spin wave modes. Thus, the spatial localization of the spin current enables excitation of a particular standing auto-oscillation mode – a solitonic spin wave bullet. These findings suggest a new route for the implementation of nano-scale microwave sources for next generation integrated electronics.

Time: 2:00pm, Tuesday, May 5, 2015

Location: Physics Building, Room 221B

(Cookies and coffee will be served from 1:30 pm)