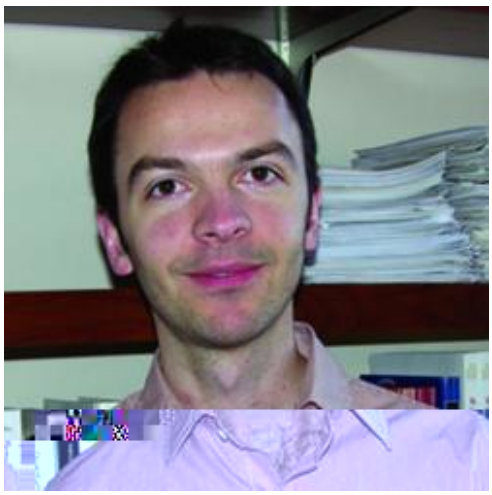
# 北京大学量子材料科学中心

Seminar

# Putting magnetic vortices to work in spintronics




## Prof. Yaroslav Tserkovnyak

*Universitysity of California*


**Time: 10: 00 am, Dec. 12, 2019 (Thursday)**

**2019 12 12 10:00**

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

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Magnetic vortices in thin (anti)ferromagnetic films can realize mobile objects, which can be injected, manipulated, and detected by electrical currents. We develop a nonequilibrium thermodynamic perspective on the emergent topological hydrodynamics of vorticity, as a new paradigm for yielding spintronic functionality. A flow of vorticity injected across a magnetic strip, which can be controlled by the interfacial spin torques, builds up a magnetic winding density along the strip, which is akin to charging a capacitor by an impinging electrical flow. We thus show how a simple insulating magnetic strip can realize an effective RC circuit for vorticity transport and discuss how it can be used for (topological) energy storage.


**Brief Bio**

2013 Now, Professor, Department of Physics and Astronomy, University of California, Los Angeles, USA

2006 2013, Assistant and Associate Professor, Department of Physics and Astronomy, University of California, Los Angeles, USA

2003 2006 Junior Fellow, Harvard Society of Fellows, Harvard University, USA

2003 Doctor of Philosophy, Department of Physics, Harvard University, USA

**AWARDS**

Many prestigious awards including Humboldt Research Award, Germany (2017); Breakthrough Prize in Fundamental Physics (as part of SNO collaboration), USA(2016); American Physical Society Fellow (2015); Simons Fellow in Theoretical Physic (2014); Simons Fellow in Theoretical Physics, USA (2012); National Science Foundation Early Career Award, USA (2009) Alfred P. Sloan Research Fellow, USA (2008).

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