

## **Solid State Seminar Series**

Speaker: Leonid Rokhinson (Purdue University)

### Spin Separation in Cyclotron Motion

**Abstract:** The ability to manipulate spin of charge carries in a controllable fashion is central to the rapidly developing field of spintronics, as well as for the development of spin-based devices for quantum information processing. Electrical injection of spin-polarized currents is proven to be a formidable challenge. We realized a solid-state analog of the famous Stern-Gerlach experiment in atomic physics, with spin-orbit interactions playing the role of the gradient of magnetic field. We achieved spatial separation of spins and bipolar spin filtering using cyclotron motion in a weak magnetic field.

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**Bio:** I have started my education at Polytechnical Institute, St.-Petersburg, Russia. I've received PhD in Physics at SUNY at Stony Brook, NY in 1996 (quantum Hall effect). The next 6 years I've been working at Princeton first as a post-doc and, later, as research staff member (developed infrared detectors and studying quantum effects in Si quantum dots). From 2002 I'm an assistant professor at Purdue University.