



John Adams Institute for Accelerator Science Lecture Series

Thursday 21st May 2015 at 4:15 pm
Fisher Room, Denys Wilkinson Building

JAI Introducing: Introduction Seminars by Recently Started Research Staff

The IBEX Paul Trap: Studying accelerator physics without the accelerator

Dr. Suzie Sheehy
Researcher

In this seminar I will introduce the Intense Beam Experiment (IBEX) currently being built at STFC Rutherford Appleton Laboratory. This compact device is designed to mimic the conditions in a particle accelerator using a Linear Paul Trap (LPT). These low-cost and flexible plasma traps have been used for over a decade to study beam physics in accelerators, in particular by our collaborators at Hiroshima University. They exploit the similarity of the Hamiltonian in the LPT with that of a beam in a quadrupole focusing channel. With such a device we will be able to study a range of topics from the fundamentals of betatron resonance crossing to complex high intensity issues such as beam halo formation and space charge effects in novel accelerators. The initial phase of IBEX will be to construct a quadrupole rod trap similar and complementary to existing devices at Hiroshima University. In parallel, a design for a more advanced LPT that incorporates higher order multipoles will be pursued and later constructed. This multipole trap will allow non-linear lattice elements to be simulated and broaden the range of experiments that can be conducted with a focus on future high intensity hadron accelerators. Here I will give an overview of the motivations behind the experiment, recent results from our collaboration with Hiroshima University and the current status of construction.

Accelerator Physics Around $\frac{3}{4}$ of the World: A Summary of Experiences & Planned Work at FONT

Dr. Ryan Bodenstein
Postdoctoral Research Assistant

As a "getting to know the new researchers" seminar, this talk will focus mainly on my previous work, but will also touch upon what I hope to accomplish during my time at FONT. The talk will start by describing my dissertation work at Jefferson Lab in Newport News, VA, which focused on beamline characterization and tuning for the CEBAF machine and its 12 GeV Upgrade. The talk will then follow my career path to Daejeon, South Korea, where I worked as a research fellow for the Rare Isotope Science Project (RISP). There, I designed a low energy beam transport line for a rare isotope accelerator. The remainder of the talk will focus on what I hope to both learn and contribute to the FONT project.

For further details contact Glenn Christian: glenn.christian@physics.ox.ac.uk