John Adams Institute for Accelerator Science Lecture Series

Thursday 19th May 2016 at 4:15 pm
Fisher Room, Denys Wilkinson Building

JAI Introducing: Introduction Seminars by Recently Started Research Staff

Nanometre-level stabilisation on nanosecond timescales

Neven Blaskovic Kraljevic
Postdoctoral Research Assistant

This talk will give an overview of the beam stabilisation system developed by the Feedback on Nanosecond Timescales (FONT) group in Oxford for use at future linear colliders. The feedback system has been commissioned at the Accelerator Test Facility (ATF) in KEK in Japan: a prototype of the future electron-positron International Linear Collider (ILC). Operating at ATF with trains of two or three bunches with a bunch separation of under 250 ns, the FONT system measures the position of each bunch in order to correct the orbit of the next bunch. Both stripline and cavity beam position monitors (BPMs) have been instrumented and their position resolution will be presented. The results demonstrating beam stabilisation to 600 nm using stripline BPMs and 75 nm using cavity BPMs will be discussed.

How far, how fast, and what shape?

Andrew Lancaster
Post-doctoral Research Assistant

This seminar will cover two topics under investigation in the JAI: Continuous Frequency Scanning Interferometry (Continuous FSI) and the design of a single-shot Smith-Purcell radiation monitor. Continuous FSI is an absolute distance measurement technique which uses a novel laser frequency scanning pattern to extend the measurement period of previous techniques. The addition of a third (fixed frequency) laser then allows the motion tolerance of the system to be greatly increased. Results from demonstration measurements performed at NPL will be presented. The single-shot Smith-Purcell monitor aims to measure the longitudinal bunch profile of a particle beam on a bunch-by-bunch basis, and is currently undergoing conceptual design. The current proposals, building on the system operated at FACET (SLAC), will be presented.

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