

Joint JAI-ASTeC Seminar in Accelerator Physics

Nonlinear Integrable Optics as a Route to High Intensity Accelerators



Stephen Webb

**RadiaSoft LLC
Boulder, Colorado**

www.radiasoft.net

Since the 1950s, almost every major accelerator project has been built on the principle of alternating gradient strong focusing. This success comes from the existence of two invariants, the Courant-Snyder invariants, which bound the transverse motion and give very predictable dynamic apertures. However, because strong focusing is linear, it has only a single frequency. This makes the beams susceptible to a zoo of collective instabilities that depend on the single frequency. One way to squelch these instabilities is to introduce a large tune spread using nonlinear magnets. The trouble with this is the resulting loss of dynamic aperture. A promising way to introduce large tune spreads

without losing dynamic aperture is the nonlinear integrable optics. In this talk, we introduce the nonlinear integrable optics, discuss known design requirements, present some preliminary results, and discuss the current status and future work of the concept.

When: 7 September 2015

Where: Audrey Wood Seminar Room
Clarendon Building
Parks Road
Oxford

Time: 2:30 pm

Webex: www.adams-institute.ac.uk/lectures