John Adams Institute for Accelerator Science

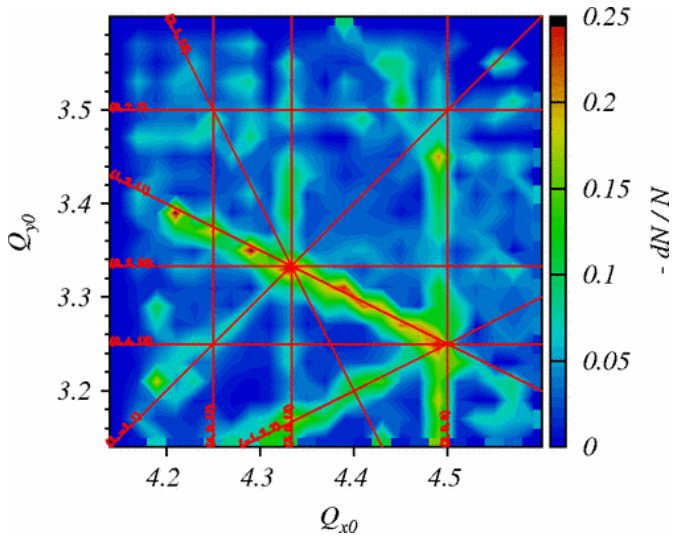
John Adams Institute for Accelerator Science Lecture Series

Friday 16th December 2016 at 2:15 pm
Dennis Sciama Lecture Theatre, Denys Wilkinson Building

Space Charge Effects in Nonlinear Circular Accelerators

The lecture will be delivered by
Dr. Giuliano Franchetti,
GSI

Abstract:
Particle accelerators are devices used for fundamental research in nuclear and particle physics. While for most of the physics community these devices are simply research tools, it is usually ignored that particle accelerators have their own physics. They are in fact, the domain of linear and nonlinear dynamics, where the phase space orbits in many dimensions rule particle trajectories and beam evolution. In addition, Coulomb forces between particles couple the dynamics adding extra complexity to the particle motion. In this seminar, the physics of space charge in a nonlinear circular accelerator will be presented. The subject is introduced from the basics of accelerator physics, and the concepts and complexities of the topics will be addressed: from the theory of single particle resonances to the impact of space charge in periodic resonance crossing.



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