FFAG'2014 Summaries

Title: Small scale FFAG test facility
Speaker: Shinji Machida
Session 10: New Proposal and future on Friday, Sept. 26th
Abstract: Purpose, goals and design parameters of small scale FFAG test facility

Title: FFAG's for high power application
Speaker: Shinji Machida
Session 6: Applications – High power, Transmutation, ADS
Abstract: A new way of designing high power fixed field accelerator (can be called cyclotron or FFAG).

Title: Dynamic aperture of FFAGs
Speaker: Sam Tygier
Session 9: Beam dynamics, simulation, codes
Abstract:

Speaker: Suzie Sheehy
Abstract: I will discuss the results and status of experiments from the collaboration between ASTeC IB group and Hiroshima University, using the S-Pod Paul trap to perform experimental simulations of the beam dynamics of integer resonance crossing, of particular relevance to FFAG accelerators. I will also discuss other physics topics which may be studied in these devices, and our future plans at RAL to utilize this technique for a wider range of topics.

Title: Status of experiments using the KURRI 150 MeV ADS FFAG
Speaker: Suzie Sheehy
Abstract: Since November 2013 an experimental collaboration has been underway to characterize the 150 MeV proton FFAG at KURRI, Japan. Here I will present an overview of the characterization experiments performed to date, and discuss plans for further experiments in the high intensity reg

Title: Preliminary Design of a 300 MeV Spiral FFAG
Speaker: Okita Hidefumi
Abstract: A new 300 MeV Spiral FFAG accelerator has been designed for the nuclear science at Kyushu University. The designed parameters were determined with calculation results of the linear approximation. Detailed design of main magnets were performed with Opera 3D and tracking simulation has been continued. In this presentation, the details of design of the 300 MeV-spiral FFAG accelerator will be reported.

Title: Update on OPAL
Speaker: Andreas Adelmann for the OPAL Developer Team
Abstract: I will report on two new developments in OPAL, namely time dependent fields and new Poisson solvers. A new multi objective optimization tool (optPilot) is using OPAL as the forward solver, enabling large scale optimization of accelerators. Examples and will be shown.

Title: Status of Center for Accelerator and Beam Applied Science of Kyushu University
Speaker: Nobuo Ikeda, Department of Applied Quantum Physics and Nuclear Engineering, Kyushu University
Abstract: An extension to the FFAG accelerator facility to accommodate the 8 MV tandem accelerator and the experimental halls where beams from the FFAG and tandem accelerators are to be delivered has been constructed in Ito Campus of Kyushu University. The tandem accelerator can be used as an injector for the 150 MeV FFAG accelerator to provide various heavy ion beams up to 40 MeV/u. The current status of the accelerators at Kyushu University will be reported in the workshop.

Title:
Speaker: Antoine Cerfon, NYU
Abstract: We recently derived a simple fluid model describing the radial-longitudinal dynamics of high intensity beams in fixed-field machines in the limit in which the amplitude of the mismatch oscillations is small compared to the size of the beam. With this model, we were able to give an intuitive explanation for

the rotation and spiraling of beams observed both in experiments and in simulations.

In the first part of this presentation, I will use the same fluid model to show that a classic shear flow instability explains the tendency of elongated beams to break up into smaller beams, and gives results in quantitative agreement with observations and simulations.

In the second part of the presentation, I will discuss our ongoing efforts to extend our model in the directions of allowing arbitrary large amplitudes for the mismatch oscillations, as well as spatial variations of the magnetic field.

Title: Current Status of KURRI FFAG
Speaker: Yoshihiro Ishi, Kyoto University
Abstract: An FFAG accelerator facility at KURRI has been operated since 2009. It delivers 100 - 150 MeV proton beams to the subcritical nuclear fuel systems to investigate ADS (Accelerator Driven System). Proton beams from our facility are also used for studies of radiation damage of materials and basic studies for BNCT. Beam studies for intensity improvement has been also carried out. Current status including results from recent beam studies and future plans will be presented.

Title: Improvement of RF operation at KURRI FFAG
Speaker: Tomonori Uesugi
Abstract: There is an imperfection of scaling field in our FFAG. By modifying RF pattern according to the variation of k-index, the beam intensity was increased by factor 3.