The Beams and Applications Seminar Series

Generating Picosecond X-ray Pulse at APS Through Beam Manipulation

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ASD/ANL

Bldg. 401, rm B2100
Friday, August 12, 1:30 pm

Host: K. Harkay, ASD

The length of the X-ray pulse generated at synchrotron light source is determined by the electron bunch length. The value is 20 ~ 40 ps at APS. The vertical beam size, however, is three orders of magnitude less, therefore, shorter pulses can be obtained by vertically tilting the bunch. A. Zholents proposed tilting the bunch using rf deflector. We found that tilted bunches could be generated by beam manipulation. A vertical tilt is developed after a vertical kick in the presence of non-zero chromaticity. The bunch chirps because the betatron phase varies along the longitudinal position. We carried out the experiment and observed a 6 ps pulse from a 31 ps electron bunch. Synchrobetatron and decoherence beam dynamics, simulation, and experimental approaches will be presented.

For more information visit

http://www.aps.anl.gov/asd/physics/seminar.html

Visitors from off-site please contact Chun-xi Wang (wangcx@aps.anl.gov, 630-252-4968) to arrange for a gate pass.

This ANL seminar series is a CARA activity and focuses on the physics, technology and applications of particle and photon beams. It is sponsored jointly by the ASD Division, the AWA group of the HEP Division, and the ATLAS group of the PHY Division.