

# **ACCELERATOR SEMINAR**

## **“NSLS-II Lattice Development: Reduced Horizontal Beta Function in Long Straights”**

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NSLS-II is a 3Gev third-generation light source under construction at Brookhaven National Lab, USA. The storage ring can support a high current electron beam (500mA) with sub-nm-rad horizontal emittance (down to 0.5nm-rad) and generate reliable synchronous radiation covering a wide spectral range from infrared to hard X-ray. The baseline lattice of NSLS-II is comprised of 30 DBA cells arranged in 15 superperiods with alternate long and short straights. The short straights have small horizontal and vertical beta functions for insertion devices but the long straights have large horizontal beta function optimized for injection and RF. To take full advantage of long straight sections for more insertion devices, the possibilities of maintaining 3 long straights with large horizontal beta function while the other 12 long straights with smaller horizontal beta function to optimize the brightness of insertion devices are explored. In this presentation, I will describe the baseline lattice and report the study results for the improved lattice considering the possible linear lattice solutions as well as characterizing the nonlinear dynamics required for good injection efficiency and adequate Touschek lifetime.

**Wednesday, April 27, 2011**

**11:00 a.m.**

**CEBAF Center, Room F113**

**Coffee before seminar at 10:45 a.m.**