Argonne NATIONAL LABORATORY

... for a brighter future

Tuning curves

The first slide shows what we have at APS, including different undulator lengths. (We have two inline undulators with the same period in a few sectors.)

The second compares devices with different period lengths but the same overall length. The number of periods is what fits.

The third shows what could potentially be gained with a superconducting undulator.

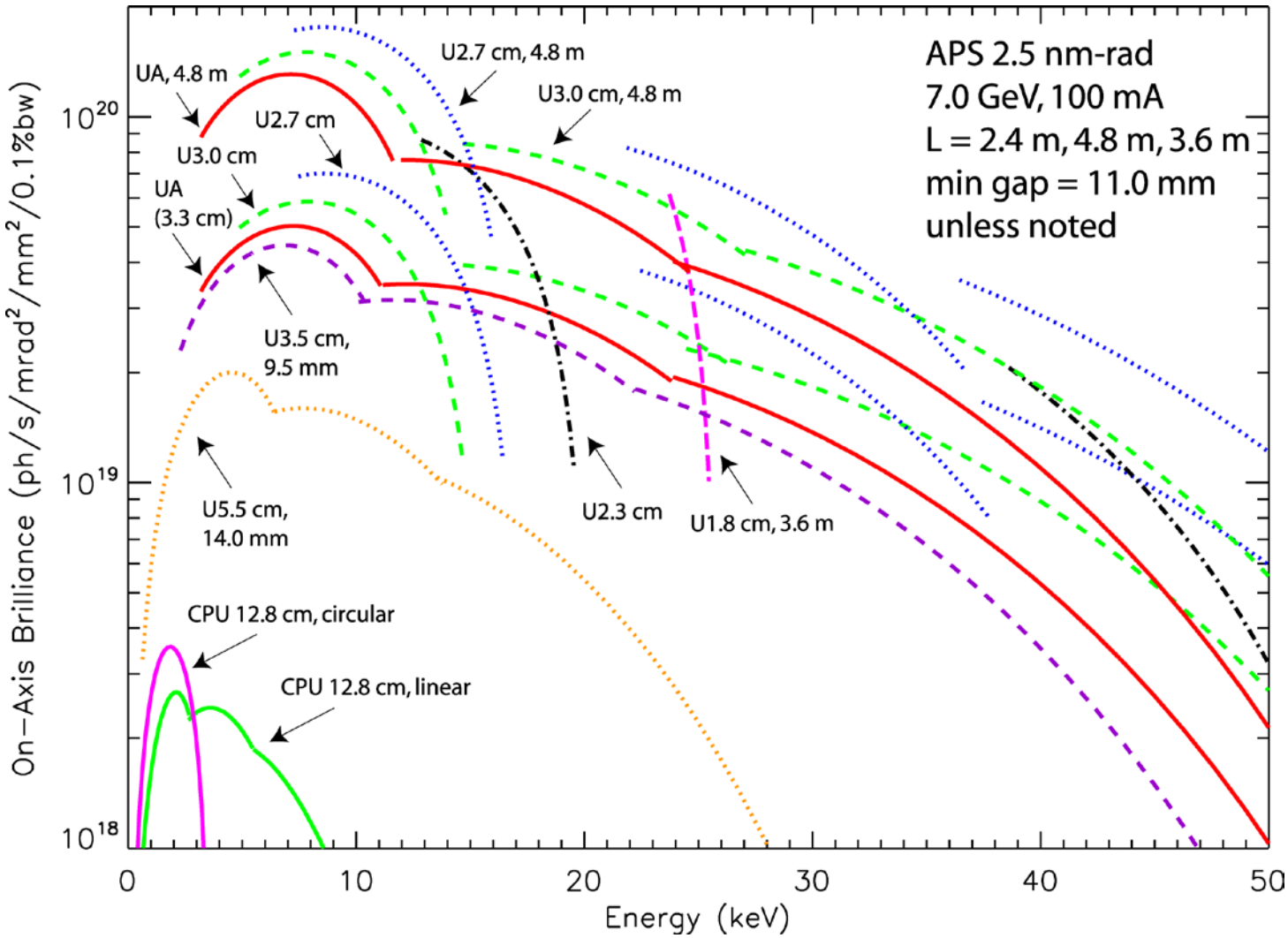
U.S. Department of Energy

UChicago Argonne LLC

Office of Science
U.S. DEPARTMENT OF ENERGY

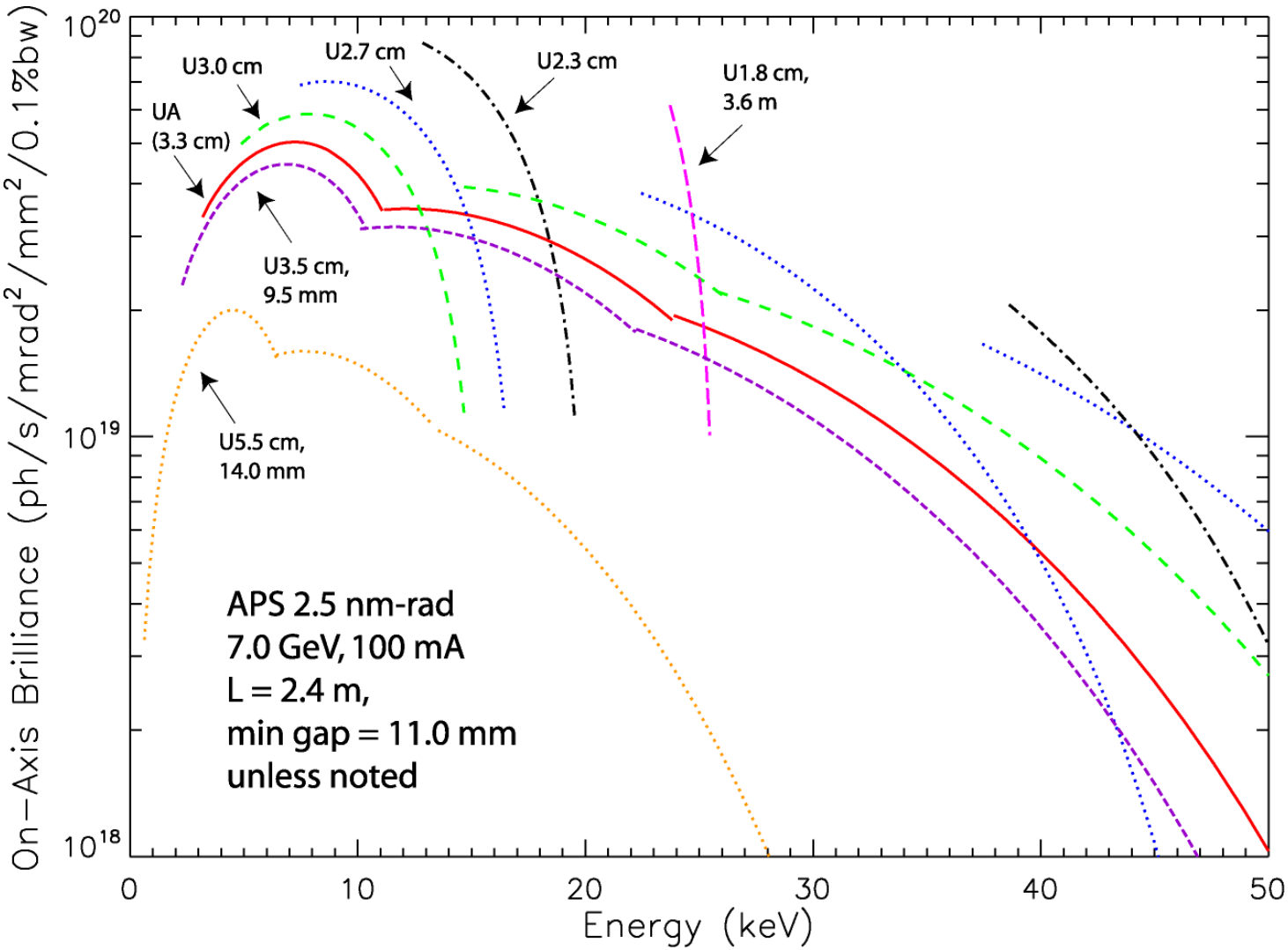
A U.S. Department of Energy laboratory managed by UChicago Argonne, LLC

On-Axis Brilliance Tuning Curves for Existing Undulators

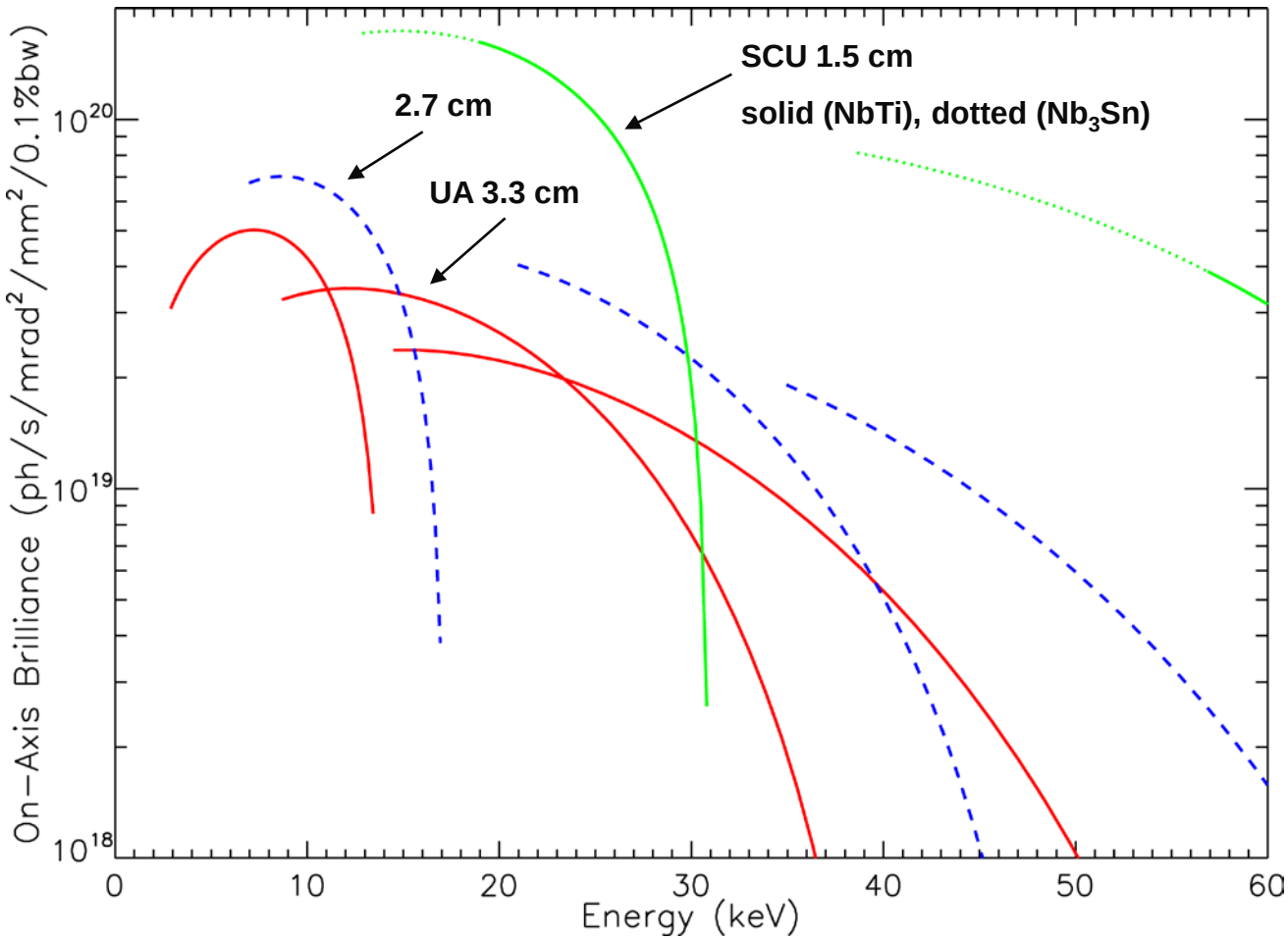


- Beam energy 7.0 GeV, beam current 100 mA, emittance 2.5 nm-rad, and coupling 1%.

On-axis brilliance: Undulators of various period lengths



The advantage of a superconducting undulator



Superconducting undulators (SCUs) operate at a pole gap of 8 mm. The assumed magnetic fields on axis are 0.8 T for NbTi and 1.2 T for Nb_3Sn (all lengths 2.4 m).