

# Decisions to Make

- Comb, canted poles, shimming: what method will we use to obtain the proper K value?
- Do we put xray diagnostics in the undulator line?
- Should the segments be designed to be remotely removable?

# Questions to Answer

- How would the comb K adjustment mechanism be used in commissioning and tune up?
- How would the phase adjustments control at the end of each segment be used in commissioning and tune up?
- If a segment is removed what is the resulting phase error and how do we correct for it?
- Can we use segment removal as a diagnostic? What will it diagnose?
- What kind of variability should we expect in xray intensities, both from SR and FEL radiation, before and after saturation?
- What is the detectable SR and FEL radiation as a function of distance along the undulator, and downstream of the undulator, taking into account losses of SR to the vacuum chamber, at high and low energies?

# Questions to Answer

- For each segment, what is the sensitivity of the total FEL output power to phase error from that segment, including large phase errors, at low and high energies, for design and relaxed commissioning parameters?
- For local orbit bumps chosen all along the undulator what is the sensitivity of the output FEL radiation to the bump amplitude, assuming perfect undulator with normal cosh/cos transverse field dependence, at both low and high energies.
- What is the pulse to pulse pointing stability expected for the FEL radiation?
- What is the effect on the FEL spot if the undulator is perfectly curved with a constant radius of 7500 km. (Such a curve will be within the nominal tolerance of 2 microns over 10 meters.), for both low and high energies.