Modeling, analytical and numerical methods (contd.)

- 2 machines in project
  - Non-linear studies at the design stage
    - NSLS II
    - MAX IV
- Very small target emittance
- Different lattices (but 0 dispersion in straight sections)

NSLS II (Weiming Guo)

- Criteria: dynamic aperture
  - On-momentum: injection
  - Off-momentum: Touschek lifetime
- Minimum number of sextupole families
  - Based on the number of constraints
  - 8^{+} families
- Multipole tolerance
  - 2 classes of magnets
  - Very large aperture

MAX IV (Erik Wallén)

- Longitudinally varying dipole
  - Very sophisticated magnet design
  - Focusing in dipoles, sextupole in quadrupoles…
- Only 5 sextupole families
- Dynamic aperture
  - Very small requirement for dynamic aperture
- Concern about superconducting wigglers