Wiggler Field Calculations

– Wiggler Nr 3 Comparison to Field Integral Measurements –
– Wiggler Nr 4 Measured Coil Offsets: Tracking Results –
– Effect of Additional Turn in 8-Pole Wiggler –
– Coil Extensions and Parabolic Coil Shapes –

1. Wiggler Nr 3 Comparison to Field Integral Measurements

- Opportunity to valide coil offset measurements !
  - ⇒ Field integral measurements inconsistent with modelled coil offsets
    - ∗ No big horizontal kick (200 μrad, 10 gauss-meters)
    - ∗ No big skew quad component
  - ⇒ The accuracy of 8/8 model without coil offsets is comparable to the measurement deviation from an ideal wiggler: $\simeq$ 1 gauss-meter

2. Wiggler Nr 4 Measured Coil Offsets: Tracking Results

- Predicted effects much smaller than for Wiggler Nr 3
  - ⇒ Horizontal kick $\lesssim$ 80 μrad rather than 200 μrad
  - ⇒ Skew quad component smaller by at least an order of magnitude

3. Effect of Single Additional Turn in Upper Coil at Z=10 cm

- Field integral increases by 1 gauss-meter
- Horizontal kick changes by $\simeq$ 10 μrad

4. Coil Extensions without Lengthening

- Vector Fields provides for 3-D parabolic coil shapes
  - ⇒ Need to match circular pole steel without overlap
- Compare model to warm single-pole measurements
  - ⇒ Measured field distortions correspond to 5-10 mil extensions
- Next step: model full wiggler with measured field distortions