Wiggler Field Calculations

– Comparison to Measurement of 7-Pole Integral –
– Investigation of 8-Pole Designs –
– Complete Transfer Functions now on web –

1. **7-Pole linear field integral**
   - Found bug in my integral calculation from VF table

     ⇒ Calculated variation of field integral with x now agrees with flip-coil measurements

     ⇒ Variation of tracking result with 180 GeV e^- (*sic*) also agrees. Don't understand magnitude of deflection at $x = 0$.

2. **8-Pole tracking discrepancy resolved**
   (Reason for large variation of $\Delta x(x)$ in MERMAID design)
   - Found nonuniformity in end-pole field in MERMAID design

     ⇒ VF uses 1-inch-wide end-pole coils
     MERMAID has 0.5-inch-wide coils
   - MERMAID calculation for 1-inch coils obtained – see AM

3. **2-D Fourier transform of B_Y now available**
   (see undelivered talk of August 2 on web)
   ⇒ Improved fits provided to BMAD

4. **New dynamical aperture calculations**
   - Wrong sign used for B_x in several regions of the field table.
     Expect corrected results soon.

5. **Complete transfer functions for now available on web**
   (`http://www.lns.cornell.edu/~critten/cesr/wigglerfields`)
   - $\Delta x, \Delta y, \Theta_x, \Theta_y$ as functions of entrance x, y

     ⇒ 8-pole field generally better on mid-planes

     ⇒ Advantage decreases with increasing x, y