7-Pole and 8-Pole Field Calculations and Fits for Peak Fields of 1.7 T and 2.1 T

1. **7-Pole Wiggler**
   - Tables of field values for 2.1 T and 1.7 T available
     $\Rightarrow$ Field quality better (boundary conditions) for 2.1 T table.
     Calculation for 1.7 T can be improved.
   - Fit result for 2.1 T available, but improvement by factor 5 in average residual known to be possible
     ($\simeq$ 1 G/field point already achieved for 8-pole field)
2. **8-Pole Wiggler**
   - Table for 2.3 T available
   - Table for 1.7 T ready later today
   - Fit result for 2.3 T provided to DLR, but much better result available soon (see above)
3. **Reached limit of present computing resources!**
   - Single 7-pole prototype end coil with fewer turns $\rightarrow$ lose 2 of 3 symmetries.
     Computed field volume increases by factor 4.
   - Dual-processor 2 $\times$ 2.2 GHz PC ordered (delivery $\simeq$ 3 weeks (?))
     Benchmark tests indicate speed will increase by factor $\gtrsim$ 6
   - CESR66 needed for BMAD. Fitting software does run on linux $\rightarrow$ request to computer group for fast linux box. Hope to match speed of CESR66.

Pole Geometries and Currents Used for Field Calculations

7-Pole Wiggler							
Pole Length (cm)	Number	Cutout Width (cm)	Cutout Depth (mm)	Main Current (Amps)	Main Turns	Trim Current (Amps)	Trim Turns
20	5	6	5.0	95k	588	——	——
15	2	6	3.5	62k	378	464	663

8-Pole Wiggler							
Pole Length (cm)	Number	Cutout Width (cm)	Cutout Depth (mm)	Main Current (Amps)	Main Turns	Trim Current (Amps)	Trim Turns
20	4	6	5.0	106k	588	——	——
15	2	6	5.5	106k	378+663	——	——
10	2	6	3.5	50k	675	——	——