90 mm and 35 mm Dipoles

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Progress and Status

Questions from the last meeting (35 mm aperture dipole)

Super-imposition of magnetic field from dipole and 3-pole wiggler:

- Check integral field of the two
- What about field harmonics ?

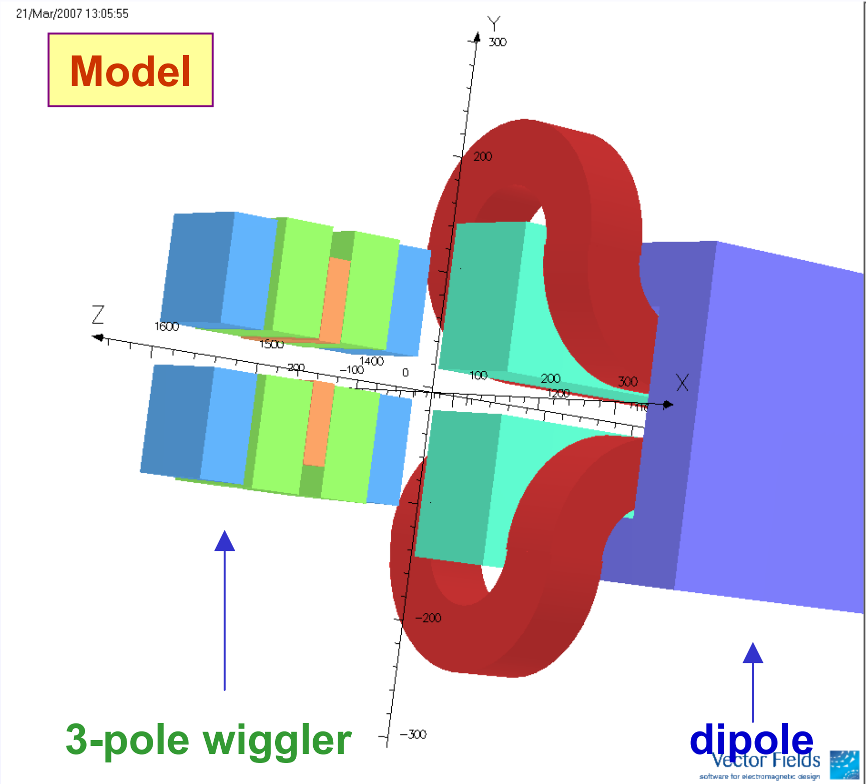
Two field profiles with the same integral field may have vastly different field harmonics.

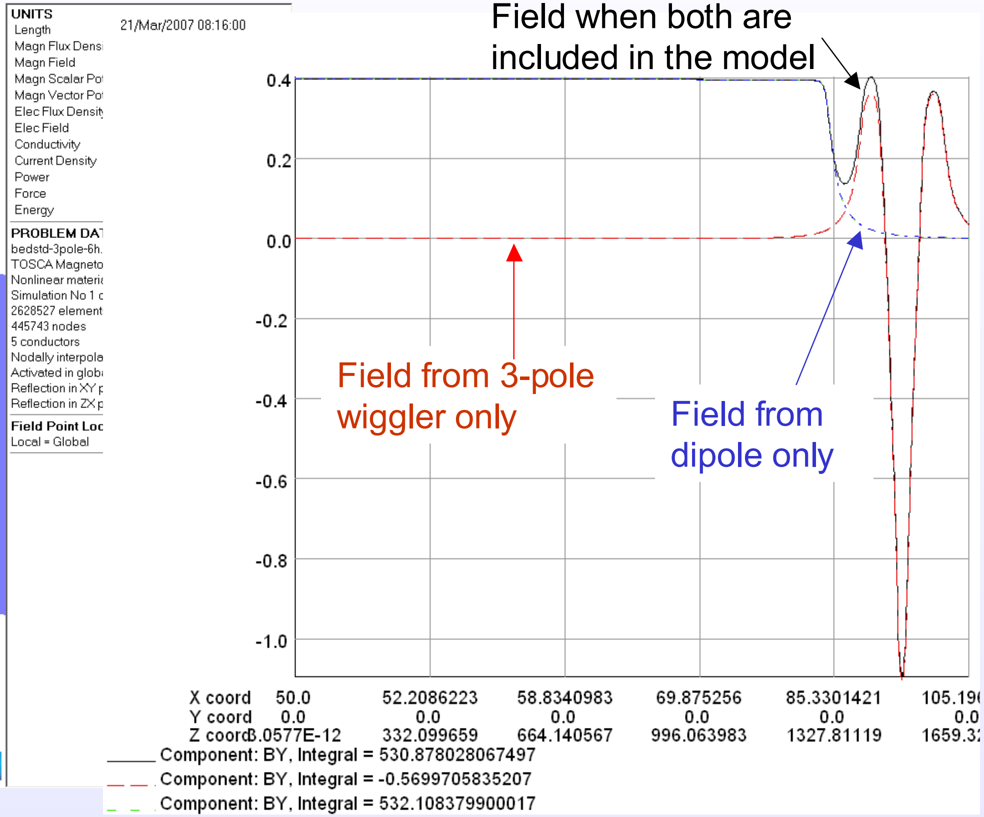
Generally larger wiggle (more up and down in the field fall-off), indicates a larger peaks in local harmonics and this may also generate larger integral harmonics.

Initial design of larger aperture (90 mm) dipole:

- A number of 2-d designs.
- The desired goal is that the two dipoles (35 mm and 90 mm) run from the power supply.

Interaction between the Dipole and 3-pole Wiggler Fields





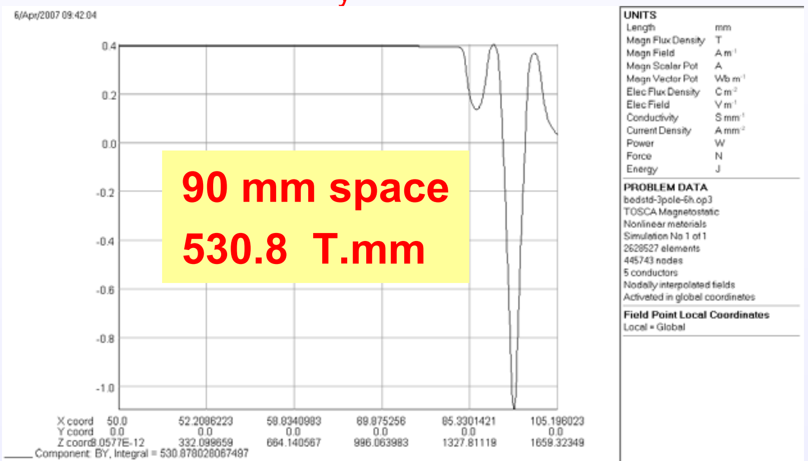
- Compare the integral field of the two when they are close and when they are far off (only dipole)
- But what about the field harmonics ?

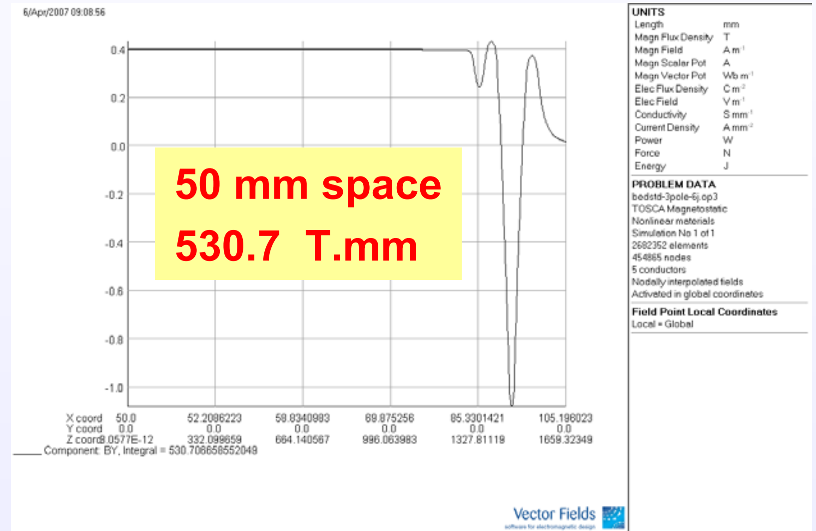
  Two field profiles with the same integral field may have vastly different field harmonics.

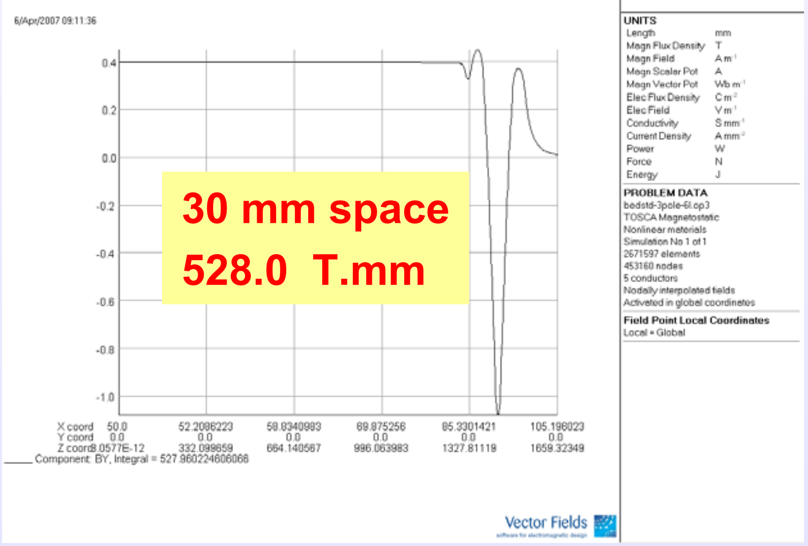
  Generally more up and down in the field fall-off, indicates larger peaks in local harmonics (however, integral harmonics may be more relevant)

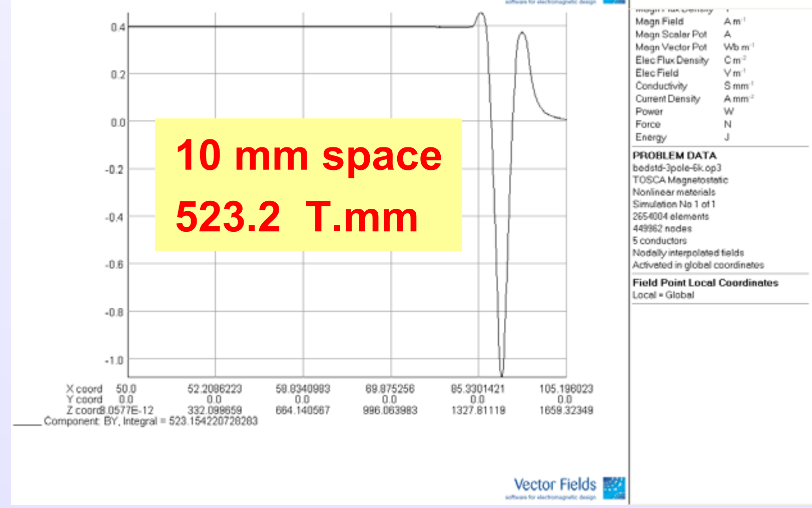
Comparison of Integral Field

Integral field (B_y) of ½ dipole by itself in this model is: 531.8 T.mm (error ~0.6 T.mm).









Comparison of the End Fields in Various Designs

Blue: Conventional racetrack with significant space for coil ends

Red: New efficient end design with zero space for coil ends

Black: Latest design – efficient ends + shield (fastest field fall-off).