



rapid cycling magnets- SIS 100

SIS 100: superferric magnet system (WF-dipoles (2 T, 4 T/s), quads..)

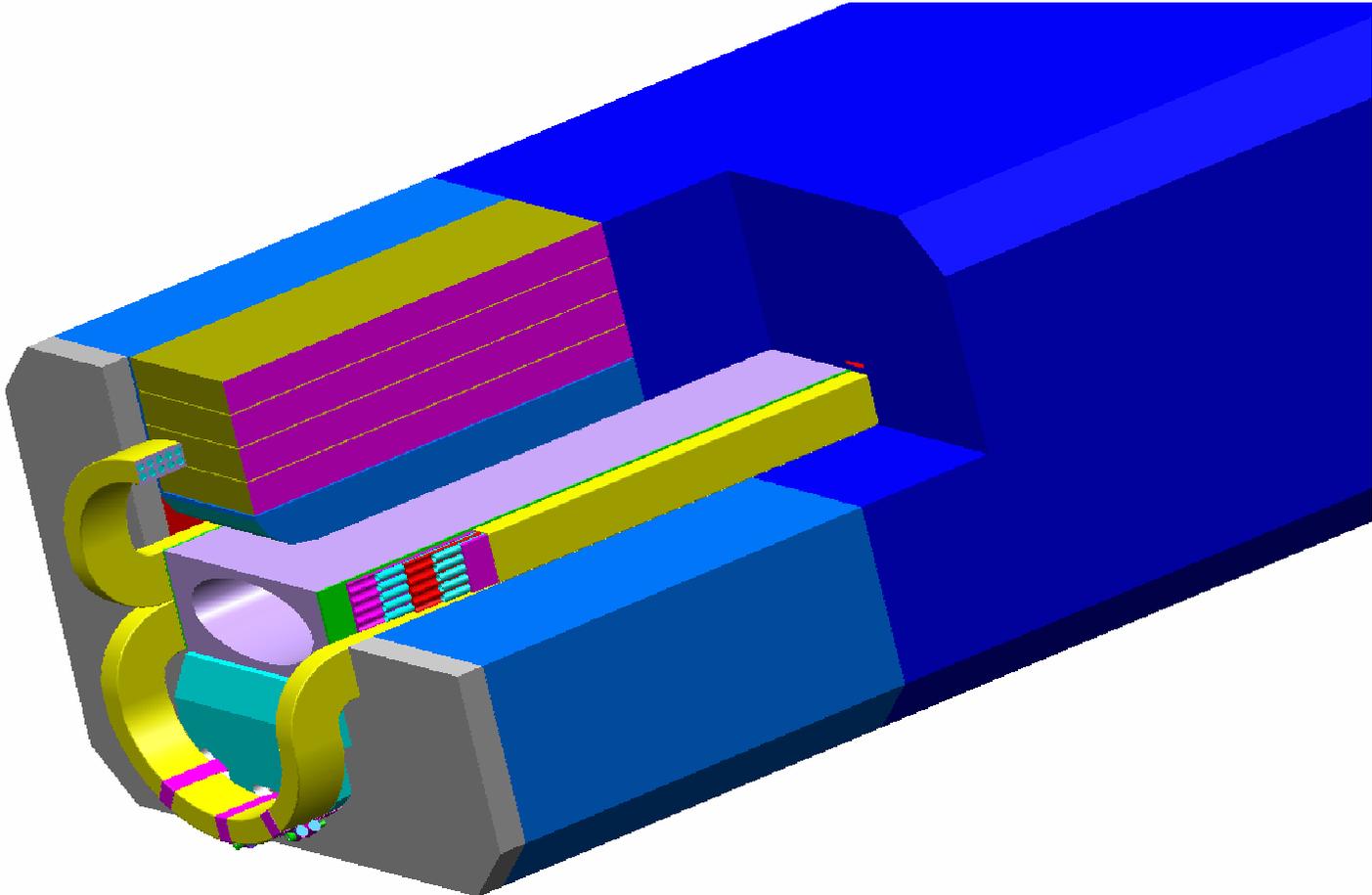
4K-iron vs. 80K-iron(cold mass: coil only)

topics:

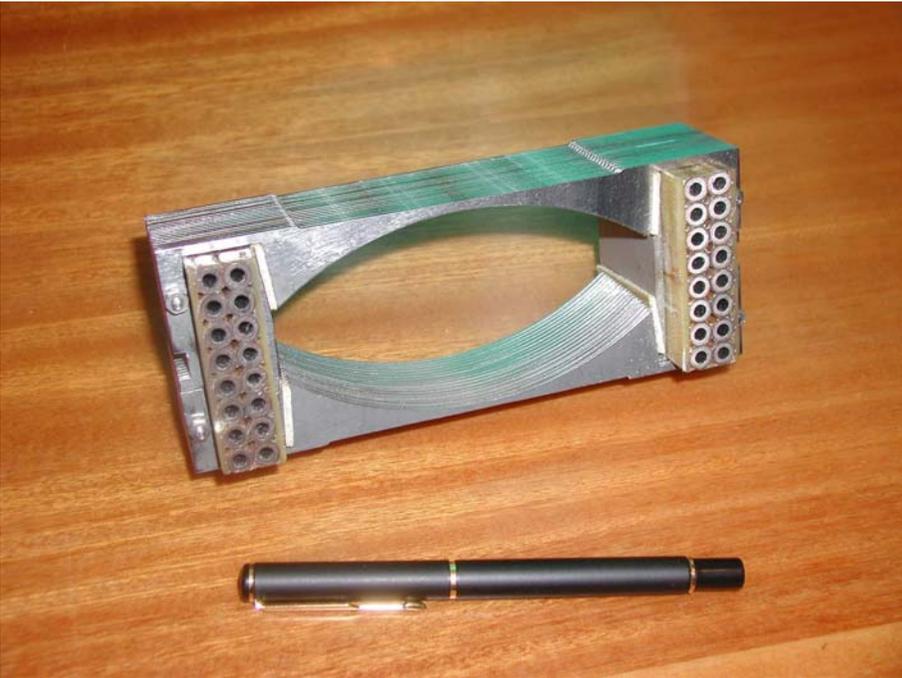
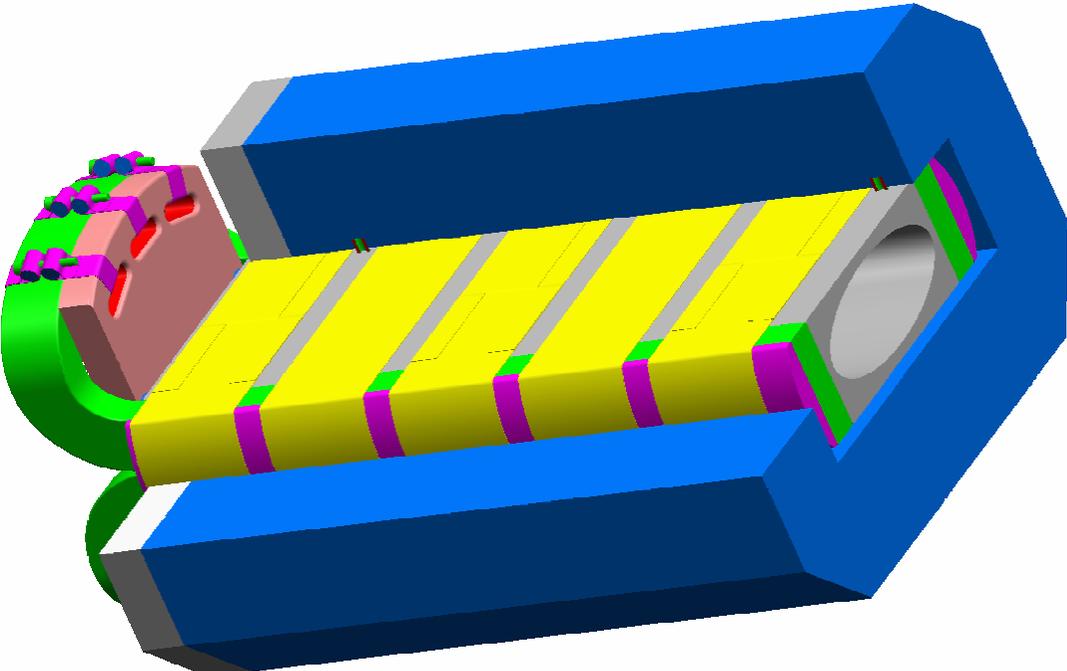
- wire /cable
- field quality (DC (iron, symmetrized coil), AC (eddy-, persistent in coil, iron, bore tube))
- losses (coil, **iron**, bore tube)
- protection
- mechanical structure (10^8 cycles over 20 y)
 - coil structure (avoid voids (by extruded forms (material??))
 - coil restraint within the core (inner support structure (material: Al_2O_3 ??))
 - coil restraint at the ends (??)



dipole: 4K-version



dipole: 80K-versions





rapid cycling magnets- SIS 200/300

we learned from SIS 200 R&D with BNL (GSI001 (4T, up to 4 T/s)

wire /cable

losses (coil, iron)

mechanical structure

- glued iron (low coercive force, high resistivity) blocks
- nitronic 40 stainless steel collars (high manganese steel)
- conductive parts replaced in coil and collars

SIS 300 (6T, 1 T/s, 100 mm aperture)

design should be based on existing design and cables

- UNK dipoles
- SSC dipoles
- LHC dipoles

UNK (5.1 T, 0.1 T/s)

