



Cornell University
Laboratory for Elementary-Particle Physics



First OPERA Model of the South Arc Combined-Function Dipole Magnet

Jim Crittenden

South Arc Upgrade Meeting

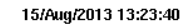
Cornell Laboratory for Accelerator-Based Sciences and Education

11 August 2013





Dummy Model with Tracking 6.5 GeV Electrons



Length	cm
Magn Flux Density	gauss
Magnetic Field	oersted
Magn Scalar Pot	oersted cm
Current Density	A/cm ²
Power	W
Force	N

sarc_bendquad_1.op3
TOSCA Magnetostatic
Nonlinear materials
Simulation No 1 of 1
197893 elements
159616 nodes
8 conductors
Nodally interpolated fields
Activated in global coordinates
Reflection in ZX plane (Z+X fields=0)

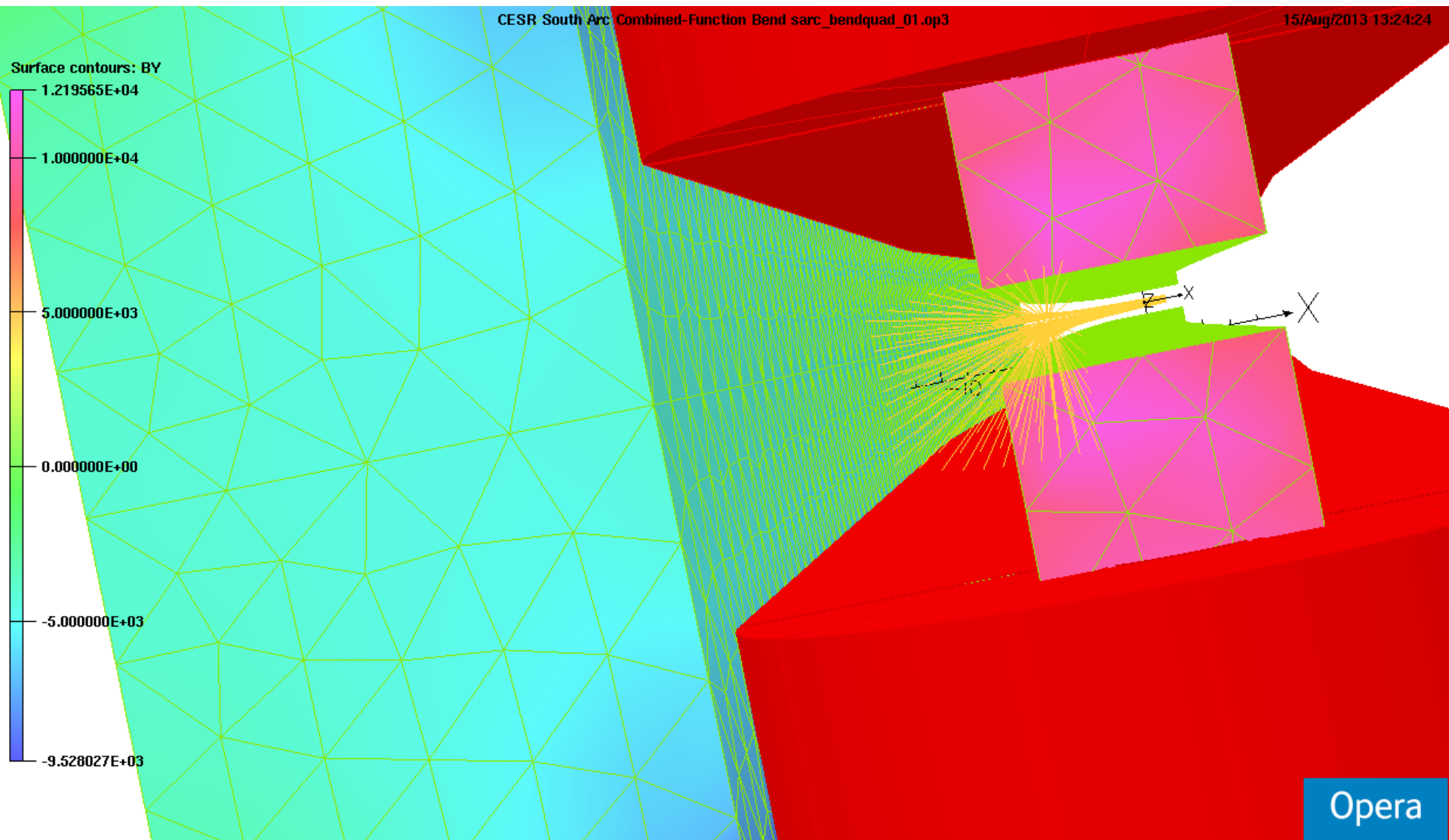
Local = Global

```
Arc  ARC (nodal)  121  Cartesian
    x=0.419767 y=0.0 z=-60.12624 to
    to 15.10303      360.3473
Line LINE (nodal)  101  Cartesian
    x=-5.0 to 5.0 y=0.0 z=0.0
```

Opera



Dummy Model with Tracking 6.5 GeV Electrons



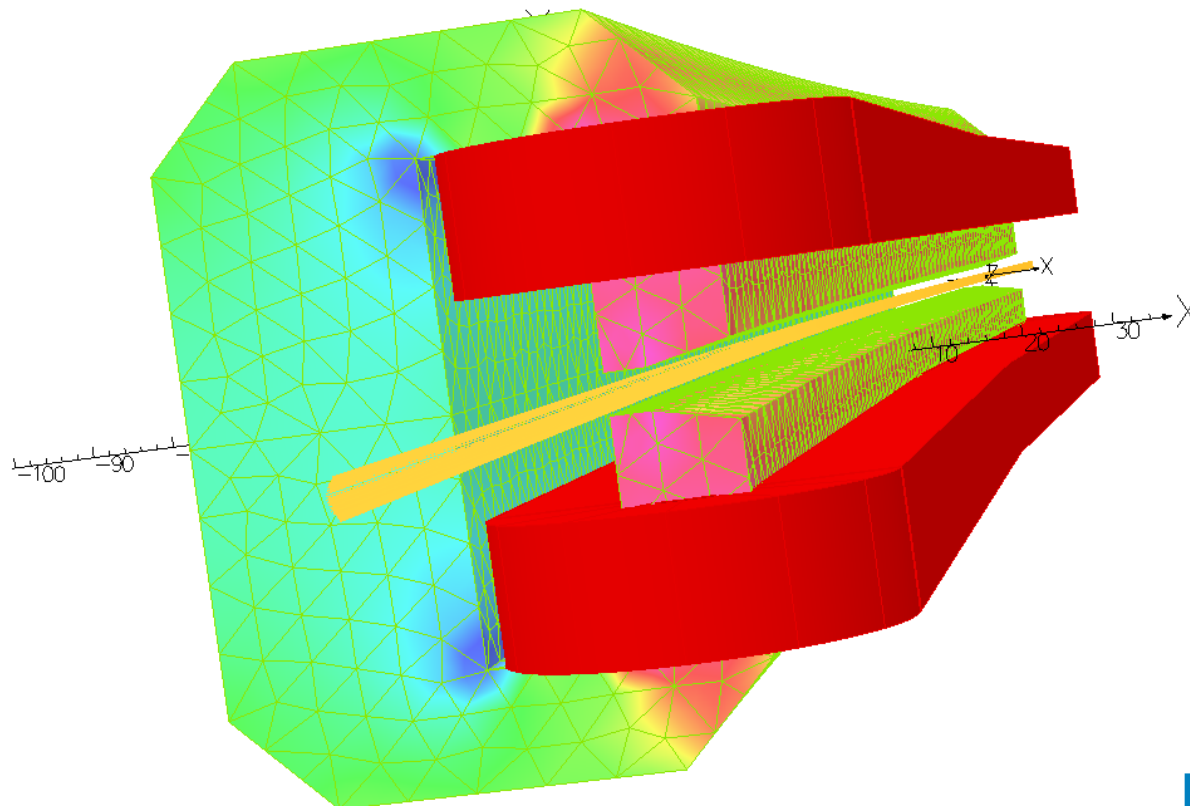
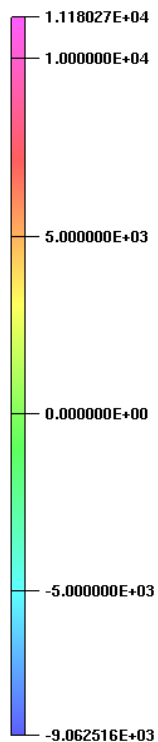


Dummy Model with Focusing

CESR South Arc Combined-Function Bend sarc_bendquad_2.op3

15/Aug/2013 13:54:26

Surface contours: BY



UNITS

Length	cm
Magn Flux Density	gauss
Magnetic Field	oersted
Magn Scalar Pot	oersted cm
Current Density	A/cm ²
Power	W
Force	N

MODEL DATA

sarc_bendquad_2.op3
TOSCA Magnetostatic
Nonlinear materials
Simulation No 1 of 1
196174 elements
155643 nodes
8 conductors
Nodally interpolated fields
Activated in global coordinates
Reflection in ZX plane (Z+X fields=0)

Field Point Local Coordinates

Local = Global

FIELD EVALUATIONS

Arc	ARC (nodal)	121	Cartesian
	x=0.419767	y=0.0	z=-60.12624 to
	to 15.10303		360.3473
Line	LINE (nodal)	101	Cartesian
	x=-5.0 to 5.0	y=0.0	z=0.0

Opera



Dummy Model with Focusing (?)

