# SP-41 magnetic field extrapolation ways

- M. Ortner and L.G. Coliado Bandeira / SoftwareX 11 (2020) 100466 "Magpylib: A free Python package for magnetic field computation" www - simple model (2-3 weeks to apply); iron yoke issue; list of software programs
- Y. Jongen, ..., G. Karamysheva, N. Morozov, E. Samsonov "Computer modeling of magnetic system for c400 superconducting cyclotron" www - 3D TOSCA
- P.G. Akishin, A.Yu. Isupov, A.N. Khrenov, P.K. Kurilkin, V.P. Ladygin, S.M. Piyadin and N.D. Topilin "Optimization of a large aperture dipole magnet for baryonic matter studies at Nuclotron" www - Hall probes and TOSCA

By

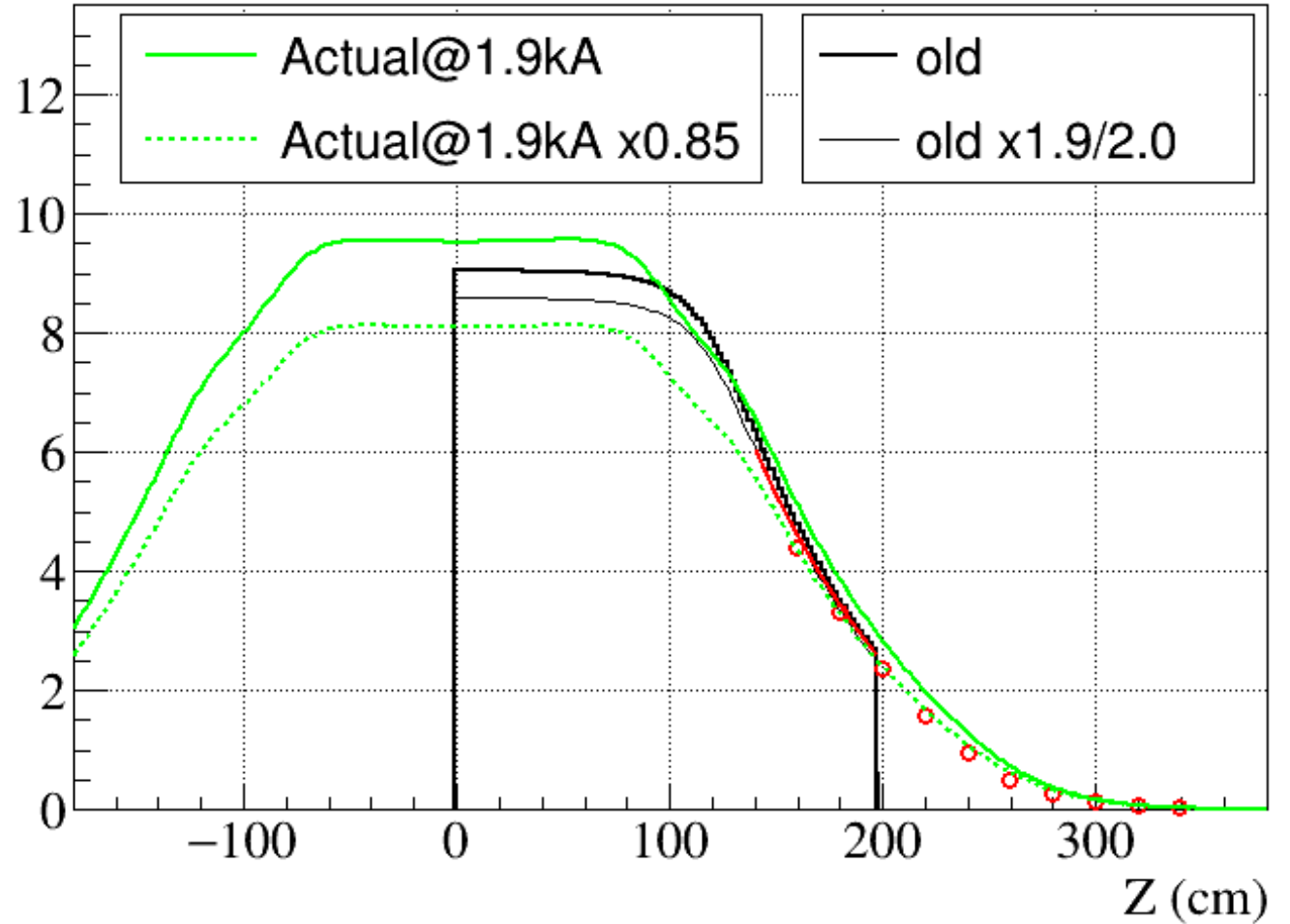y= 0   30   50 cm
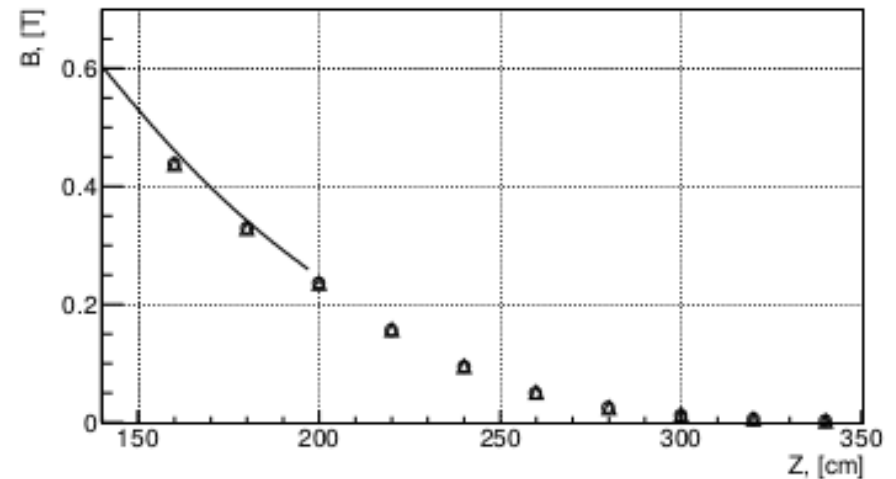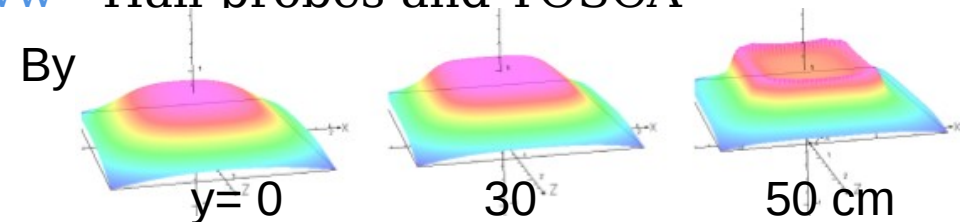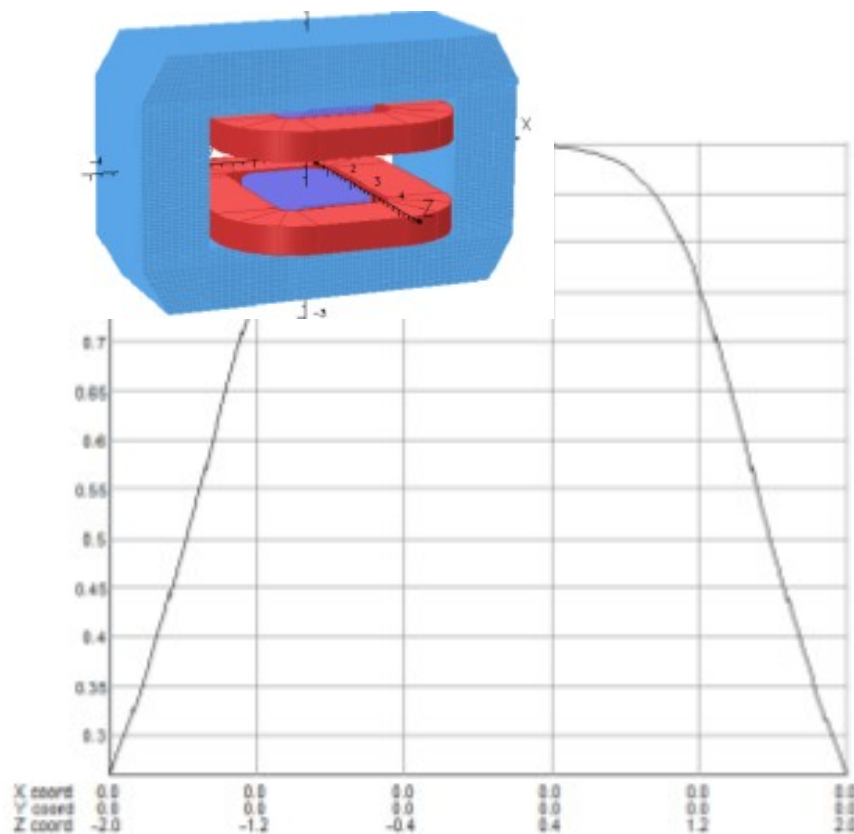
The magnetic field |B| for the current value in the coils of 1900 A as a function of Z coordinate (X = 0.2 m and Y = −0.22 m). The open circles and triangles are the data obtained with the planar and coaxial 3D Hall probes [1], respectively.
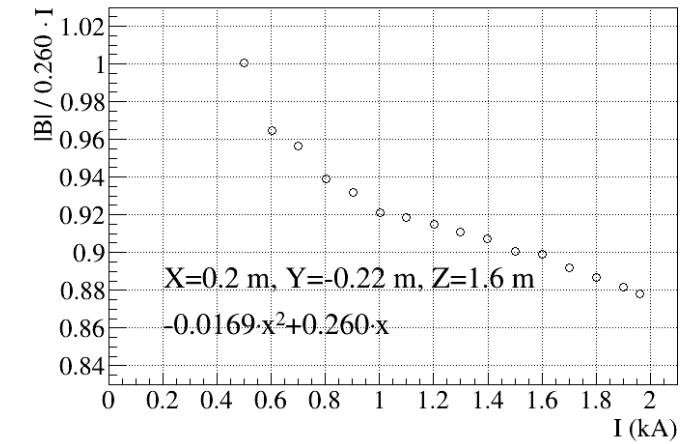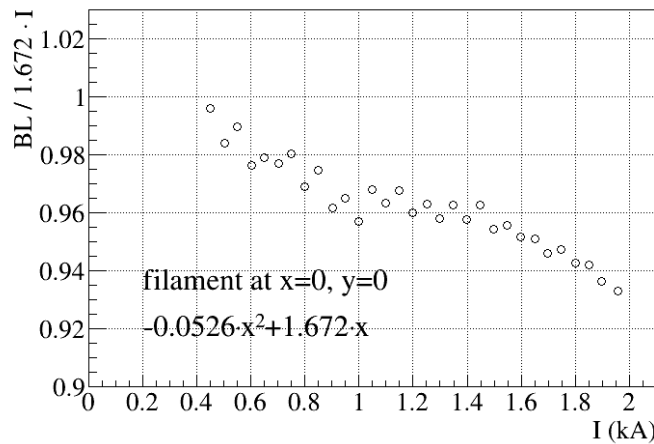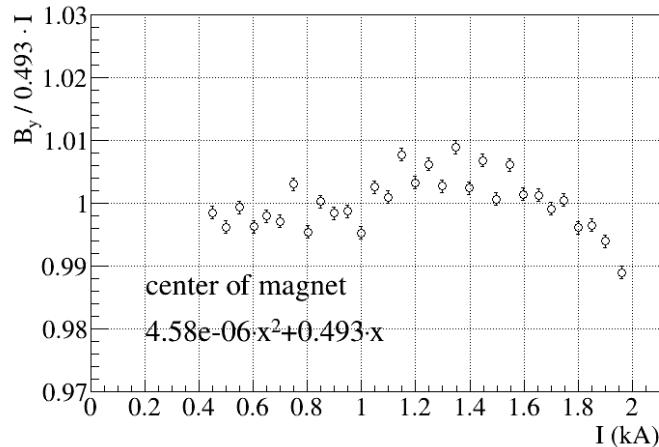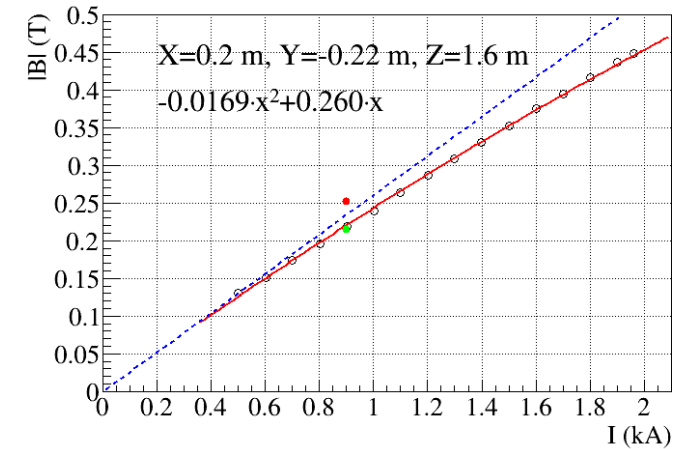
By maps

Old and new (X=Y=0 cm)
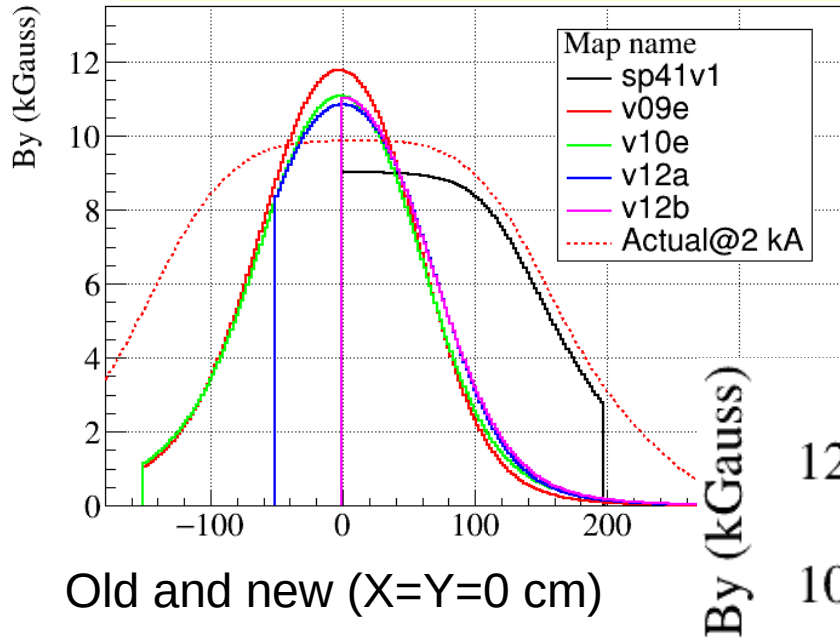
Measurement at 1.9 kA (X=20, Y=-22 cm)

Linearity and saturation

data from https://arxiv.org/abs/1407.7096v1
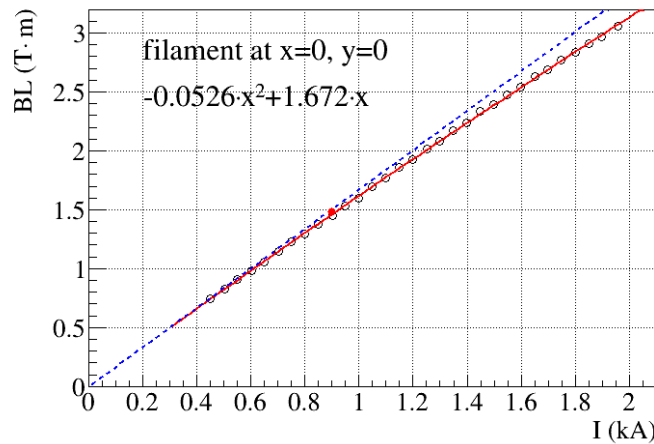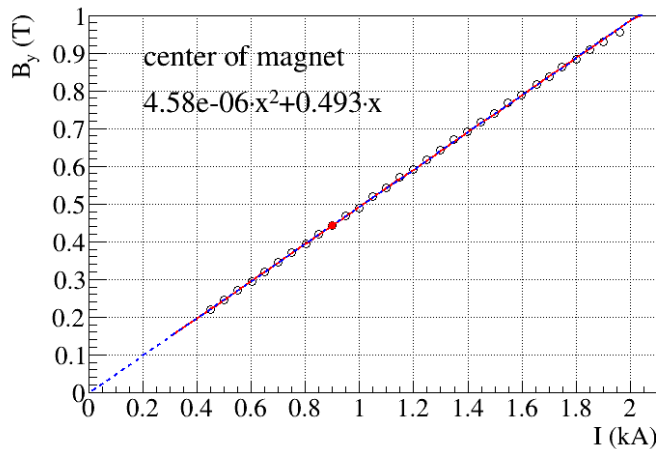
- $axx+bx$ is a wrong function to fit
- the saturation occurs below 1 kA
- red points at I=0.9 kA – actual map (0.4437 T, 1.485 Tm, 0.2523 T)