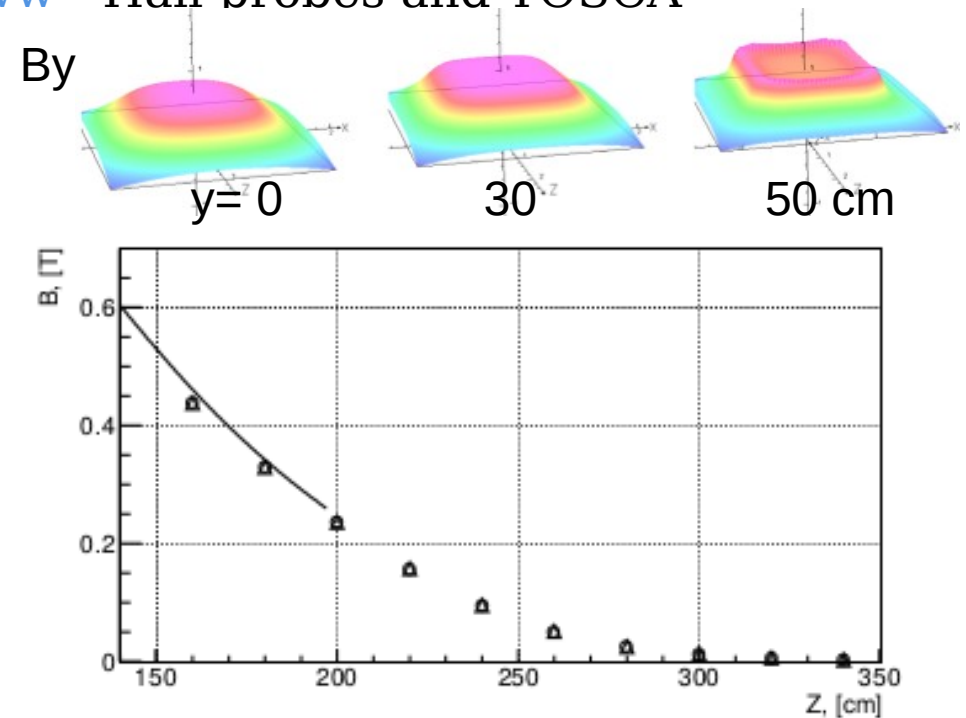
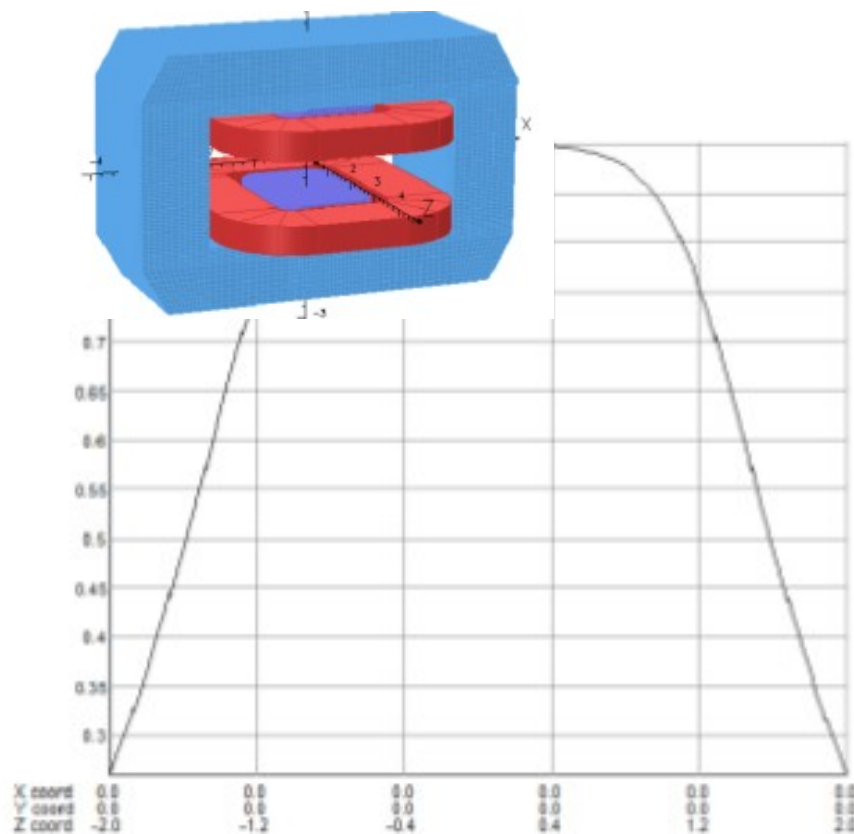


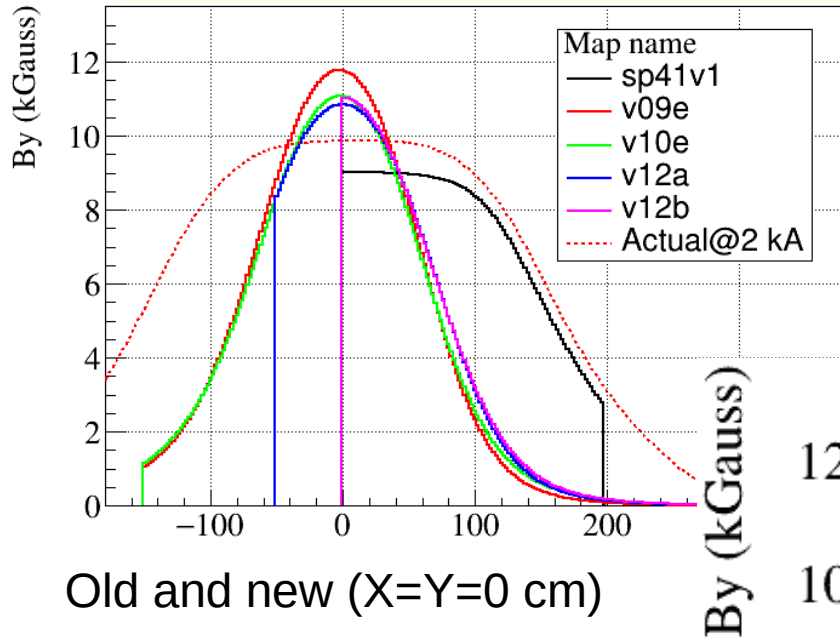
# SP-41 magnetic field extrapolation ways

- 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

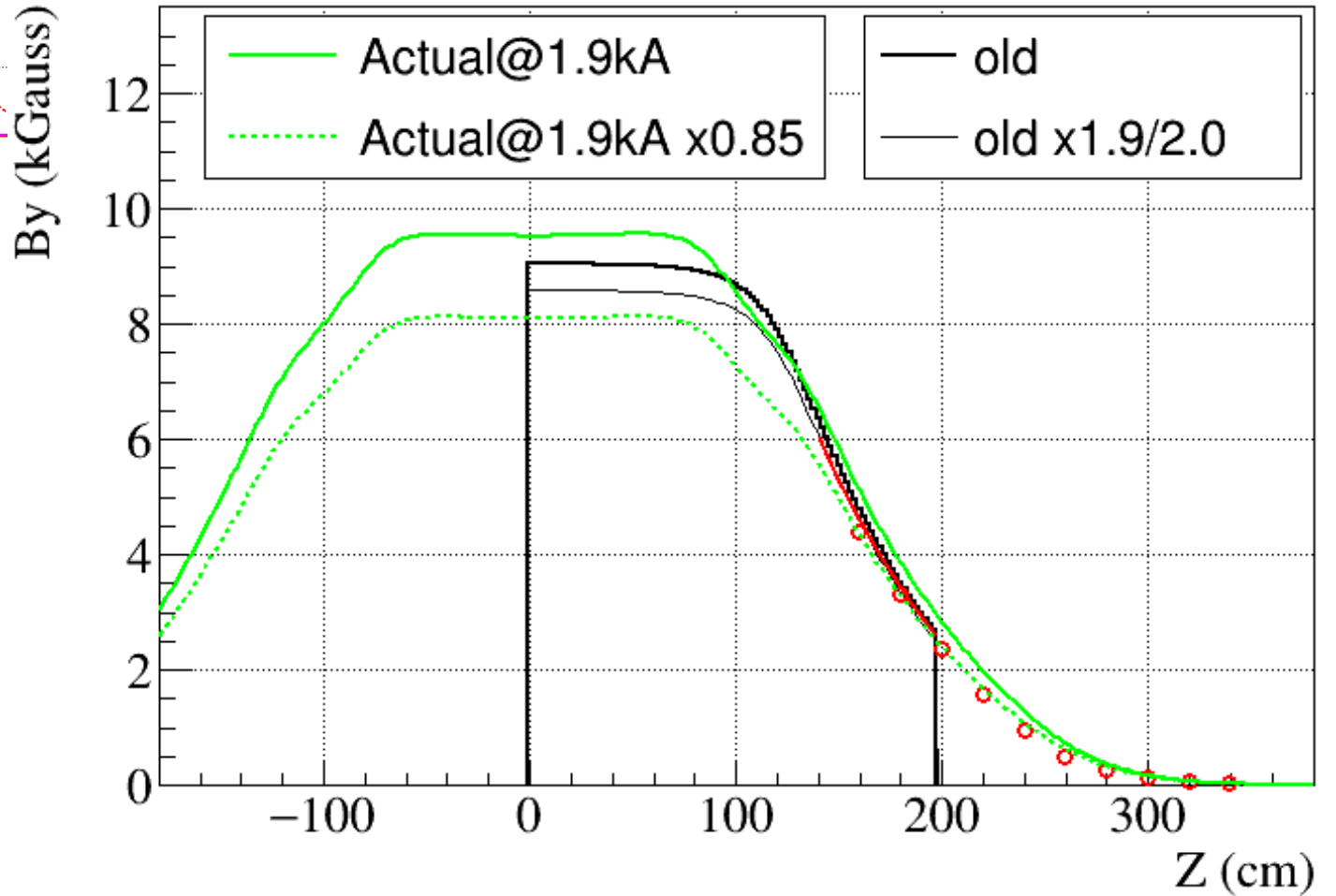


The magnetic field  $|B|$  for the current value in the coils of 1900 A as a function of Z coordinate ( $X = 0.2$  m and  $Y = -0.22$  m). The open circles and triangles are the data obtained with the planar and coaxial 3D Hall probes [1], respectively.

# By maps

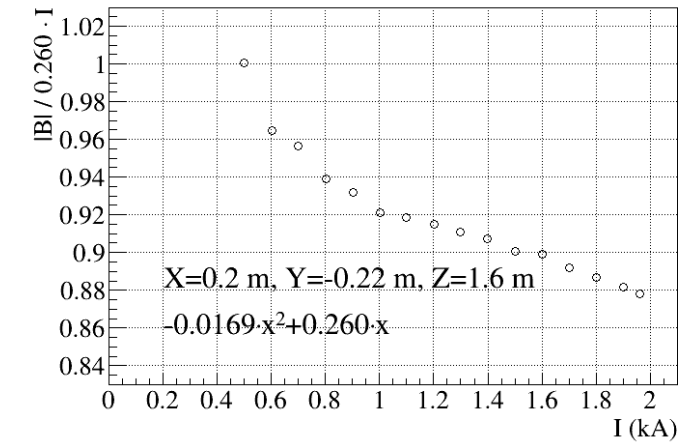
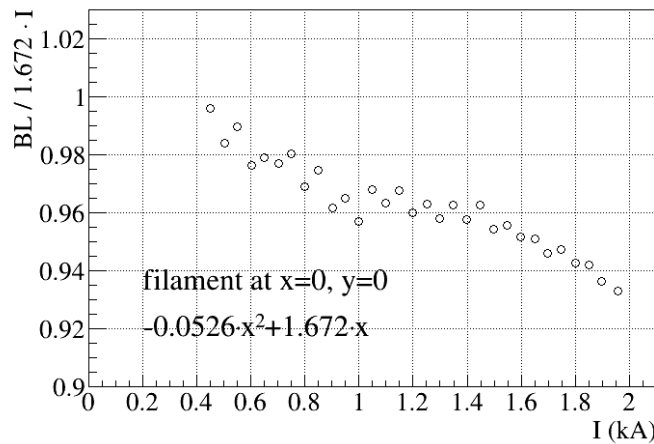
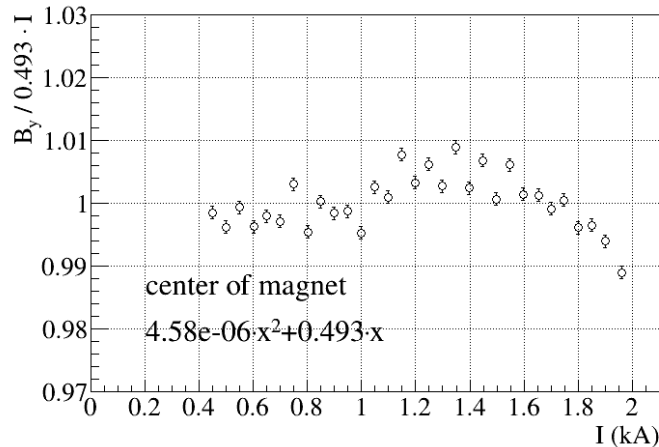
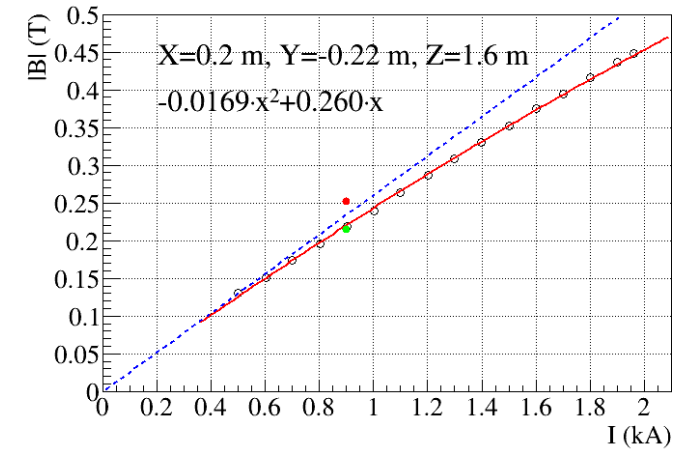
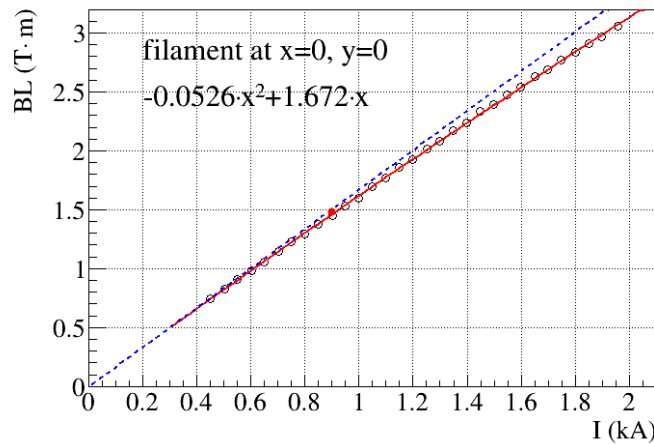
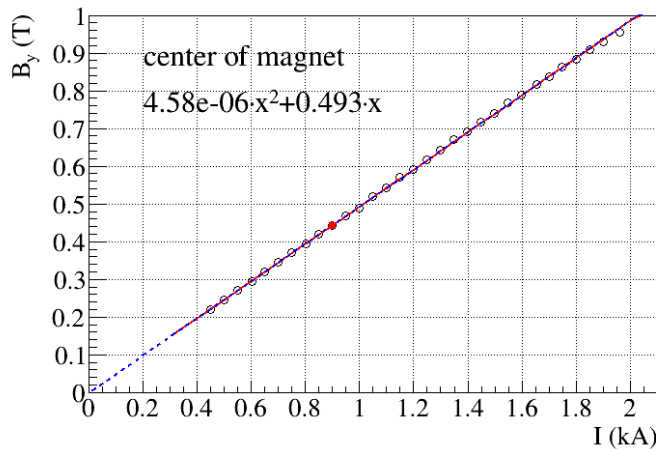


Measurement at 1.9 kA (X=20, Y=-22 cm)



# Linearity and saturation

data from <https://arxiv.org/abs/1407.7096v1>

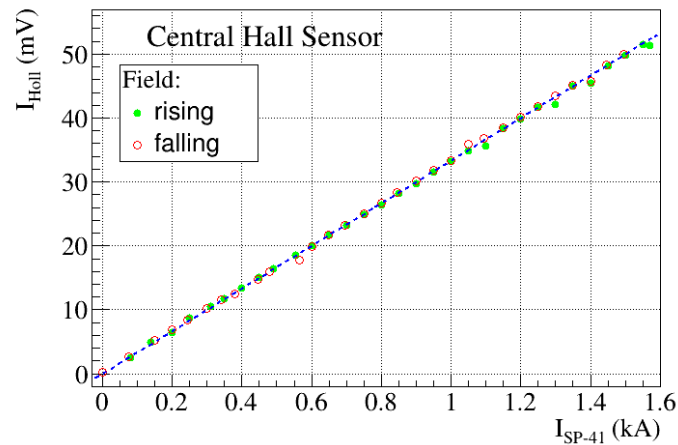
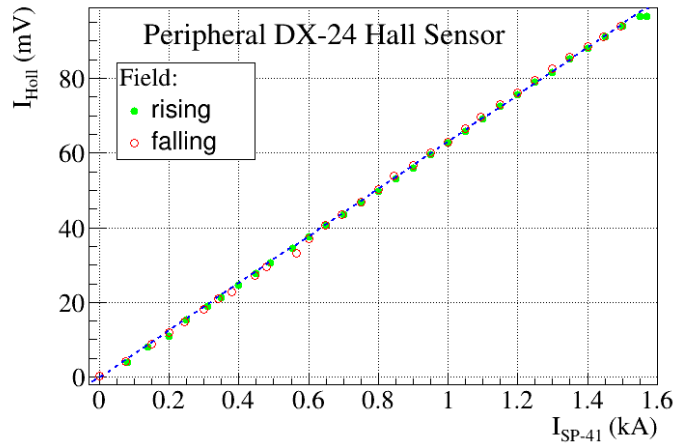


- $axx+bx$  is a wrong function to fit
- the saturation occurs below 1 kA
- red points at  $I=0.9 \text{ kA}$  - actual map (0.4437 T, 1.485 Tm, 0.2523 T)

# Magnetic field $\leftrightarrow$ Hall detector

[http://bmnshift.jinr.ru/wiki/doku.php?id=magnetic\\_field\\_-\\_hall\\_detector](http://bmnshift.jinr.ru/wiki/doku.php?id=magnetic_field_-_hall_detector)

hall-1.pdf



hall-2.pdf

