# Beats-Milano STATUS

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*) Tracking code changing for the start to end simulations from Astra to T-Step (evolution of Parmela):

-This choice allows:

to simulate the final beam line with the dog-leg

to check the 3D field maps of non-symmetrical magnetic elements (quadrupoles - dipoles - magnetic shields)
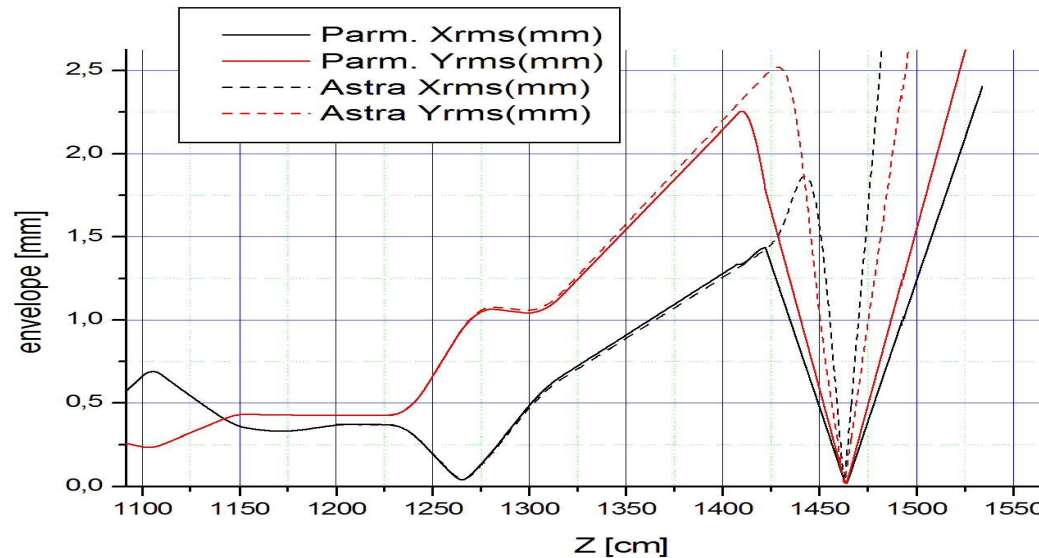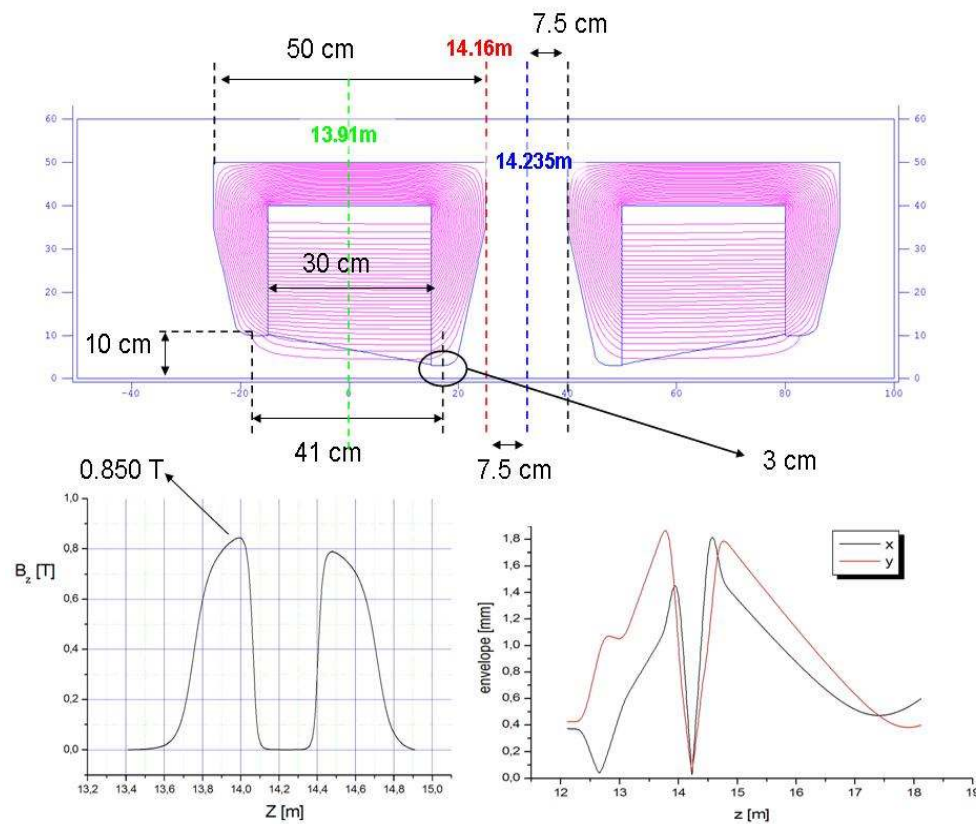
*)Magnetic multipole component tollerances in the dog leg magnetic elements; Stimaded by analytical equations:
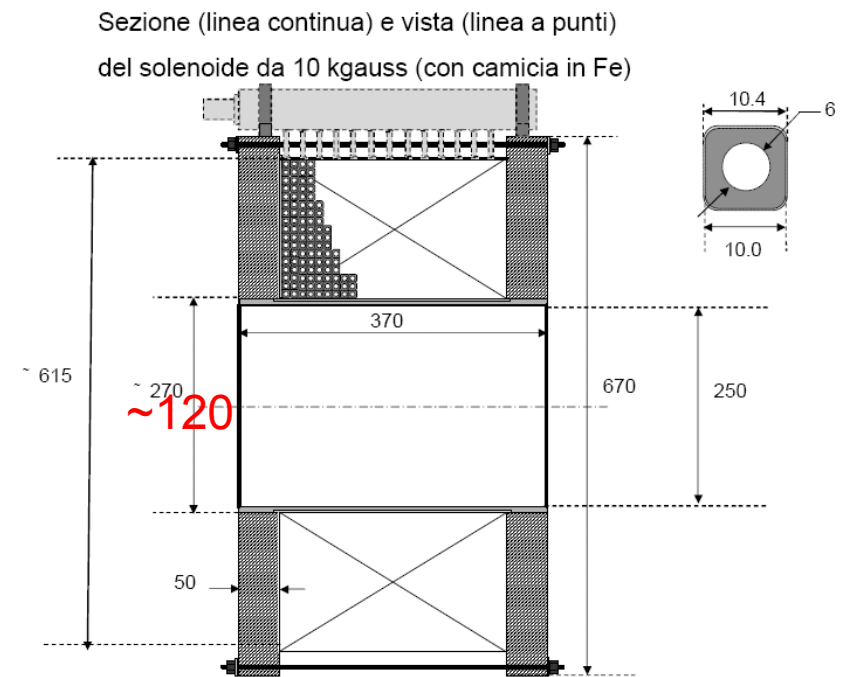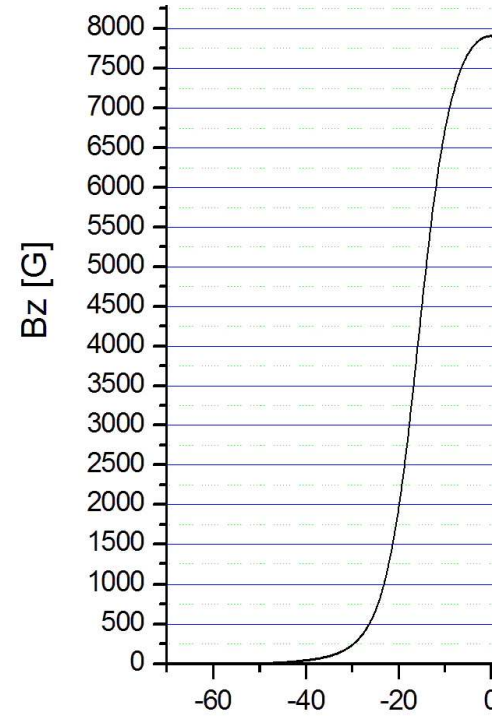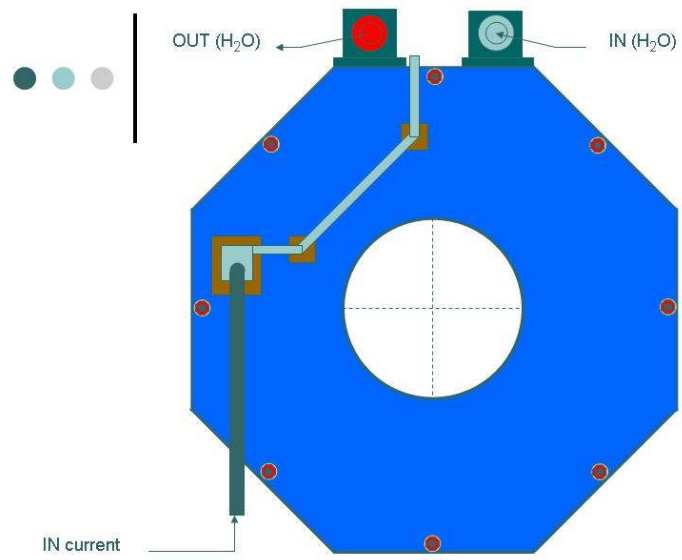
$$b_1/b_0 = b_2/b_0 \sim 0.05 \ \%$$

*)Focusing Solenoid Design

end 2007

end 2008

OUT (H₂O)

IN (H₂O)

IN current

Bz [G]

8000
7500
7000
6500
6000
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0

-60   -40   -20   0
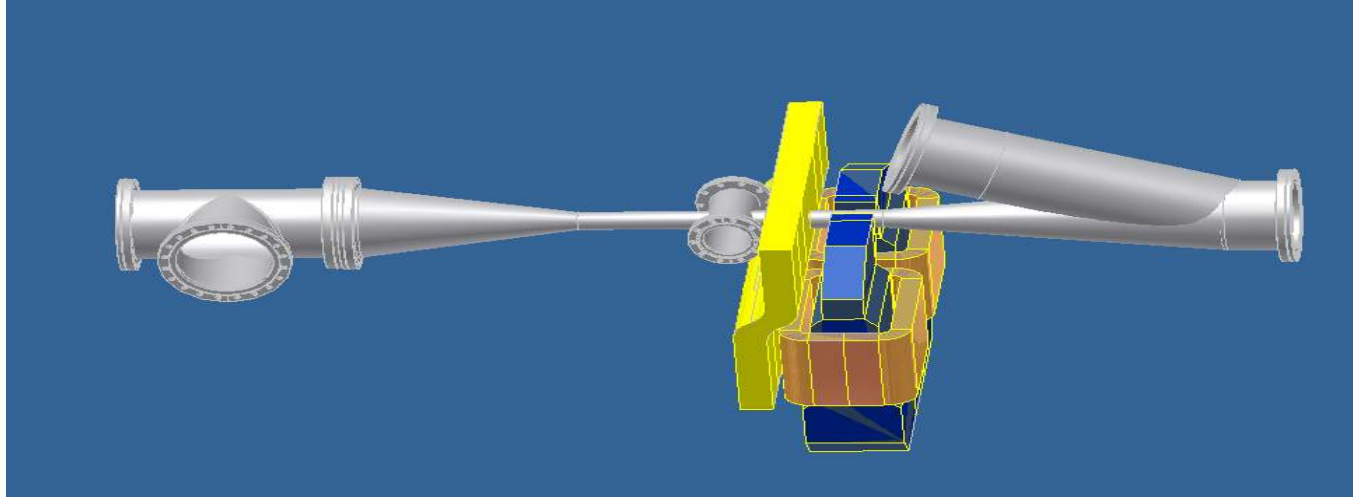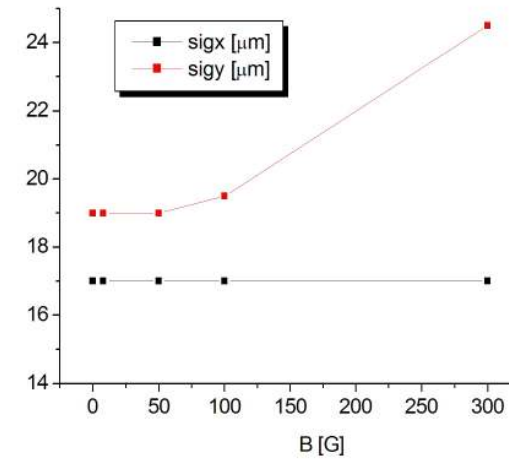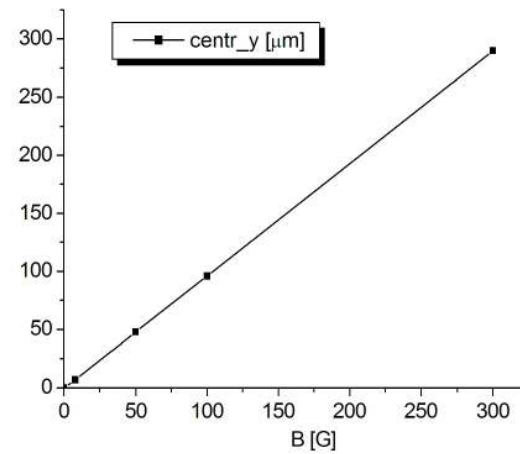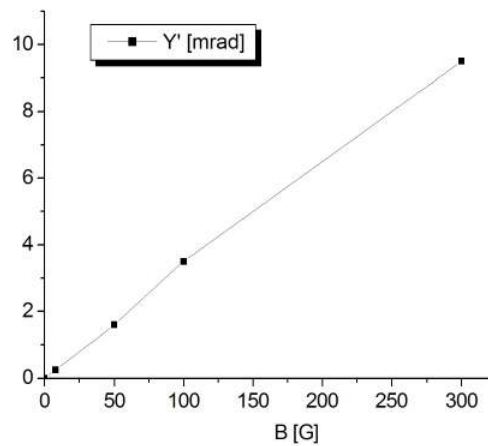
we are defining the final geometry

*)The Presence of dipolar field in the interaction point
To investigate the real necessity of the shield (and all the Geometry)

To be confirmed by the real maps

Beam tracked by T-Step from a reproduced real SPARC bunch. The emittance is quite high 2.5 mm-mrad and it is an example of a non-optimized electron bunch - emitted photons $\sim 4\cdot10^8$

*)Study of the residual gas effects in the PlasmonX/Beats interaction chamber
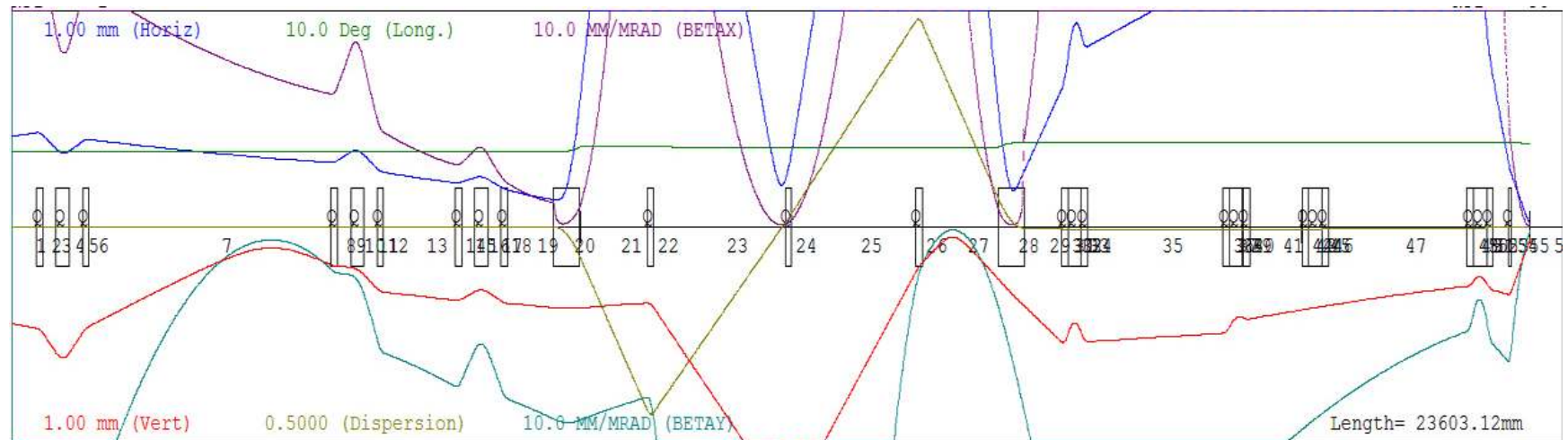
by F. Broggi

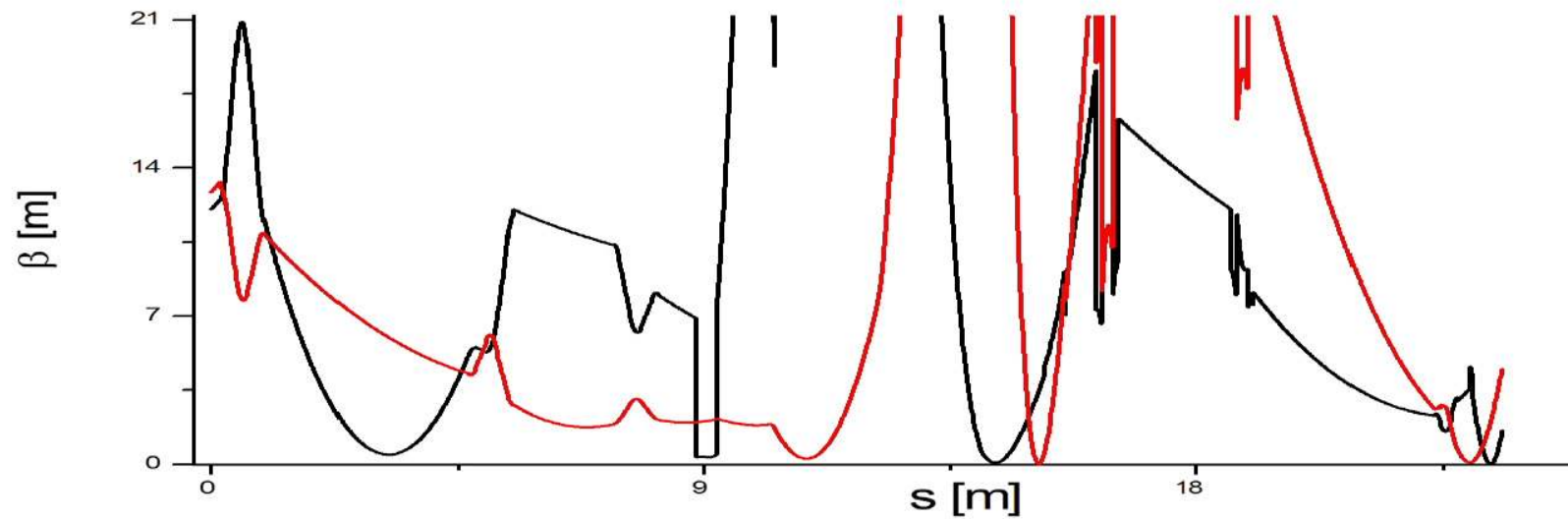Analysis performed by the code Fluka (10 runs with 10k particles).
Considerer pressure: 10^{-9} - 10^{-4} - 10^{-3} - 10^3 mbar

The negative effects on the electron beam are visible for pressure higher the 10^{-4} mbar

*)BNL beam line - trace-3D analysis (analytical code)

Csr-Track

We are changing from Csr-Track to T-Step, which had been developed in
Los Alamos from the same team of Trace-3D.

*)We have developed a parallelized code able to perform a statistical analysis of the all start-to-end Thomson scattering process.
It is strongly adaptable, can works independently from the tracking codes (Astra, T-Step, etc.)