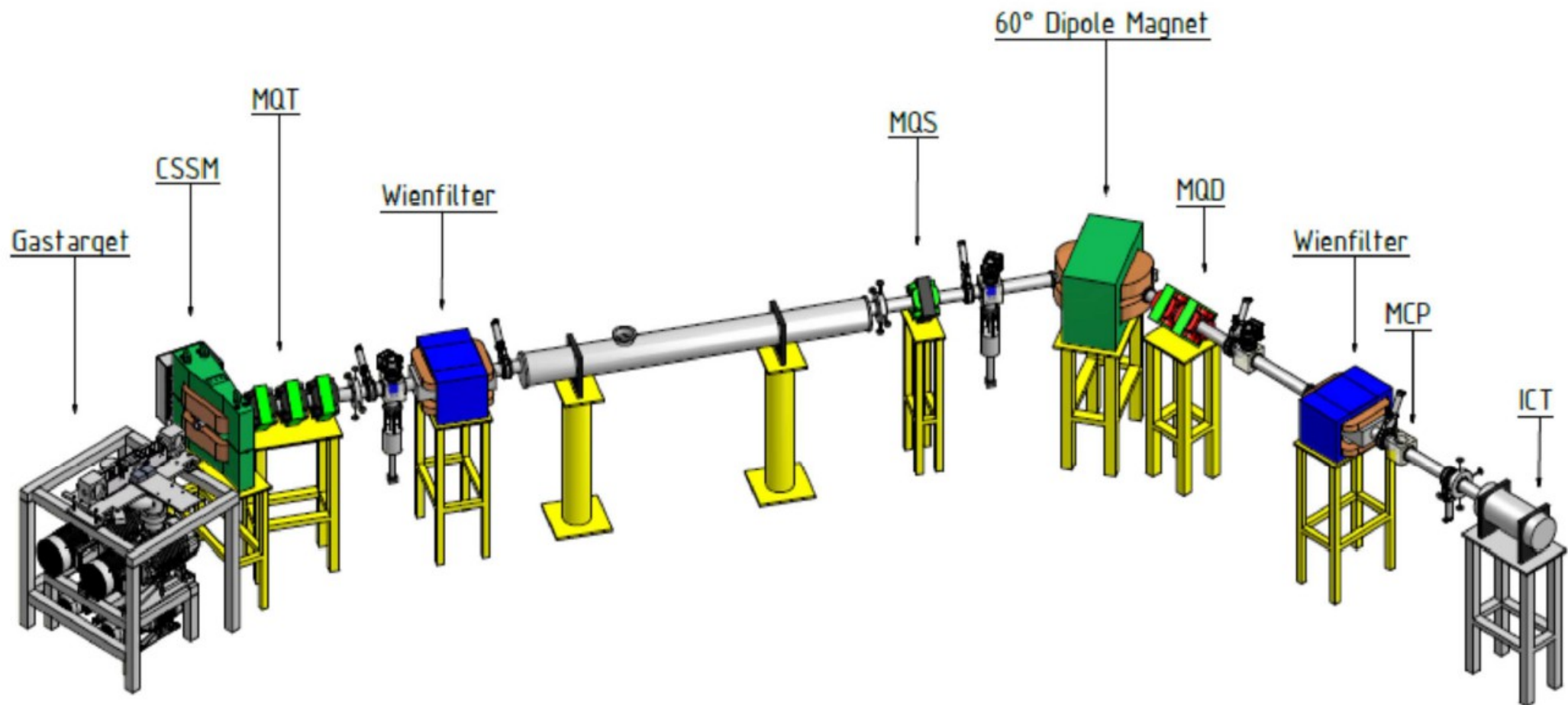


Measurement of the $^{12}\text{C}(\alpha,\gamma)^{16}\text{O}$ reaction cross section

- C/O abundance →
- Heavy elements synthesis
 - White Dwarfs' core (Galaxy date estimation)
 - Supernovae explosion

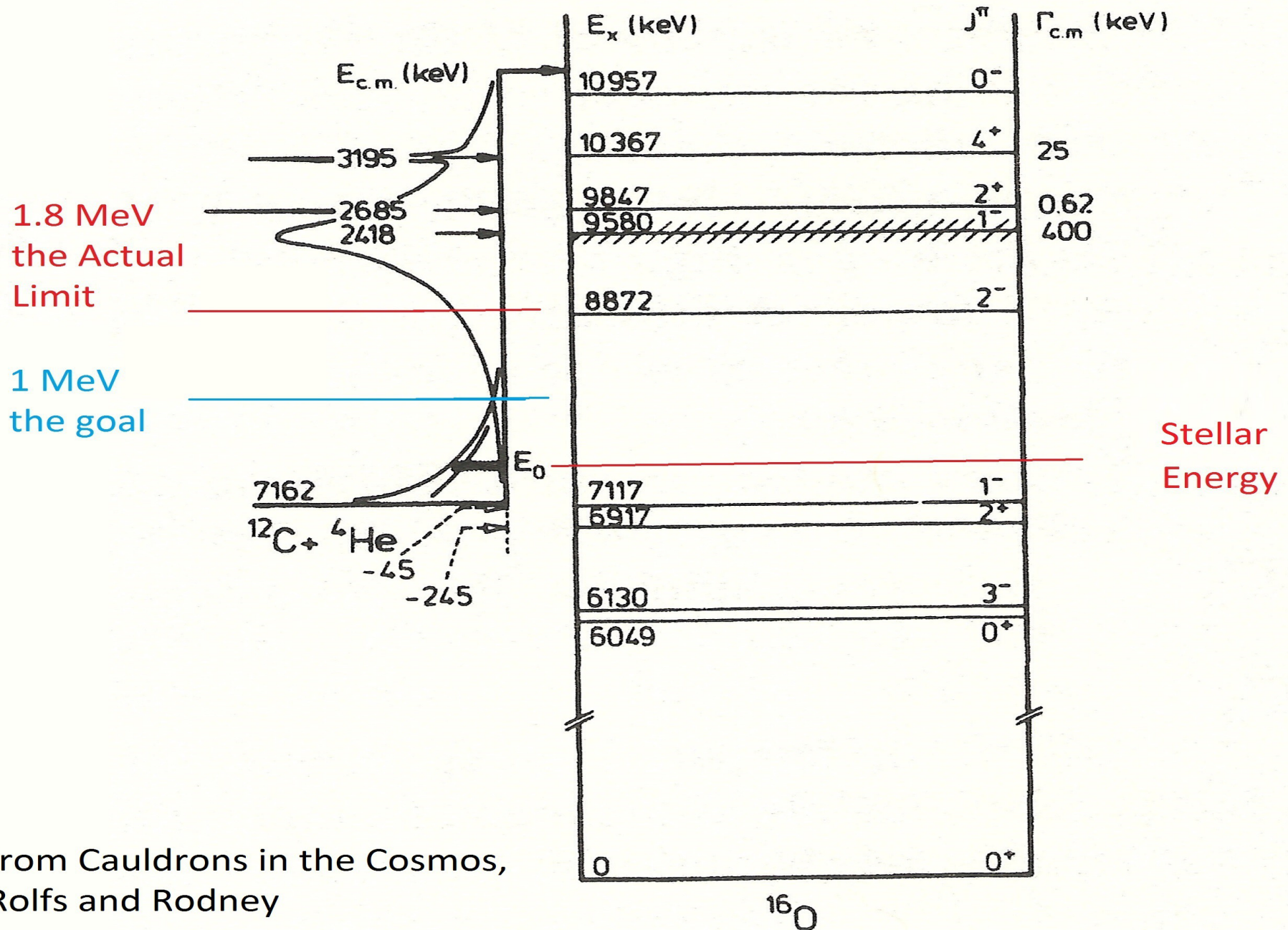
European Recoil mass separator for Nuclear Astrophysics (ERNA)



The optic of the separator sets
constraints to the target length

design by D.Schürmann,
ERNA collaboration

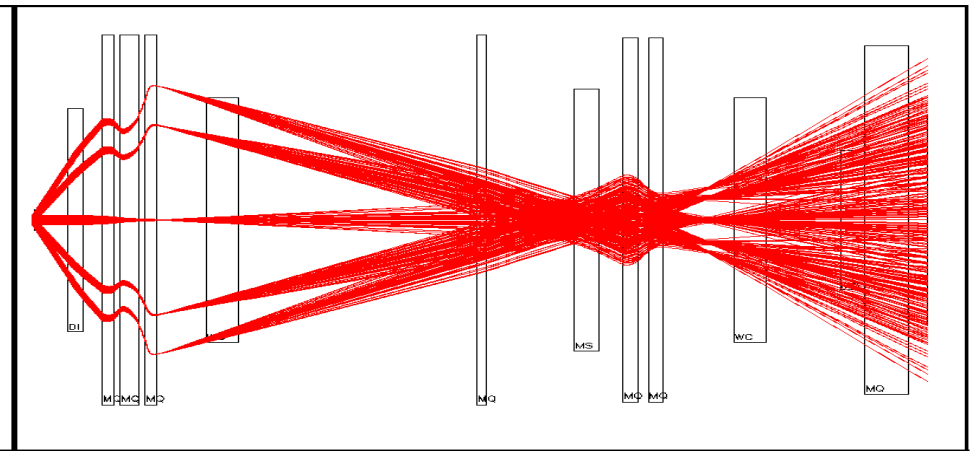
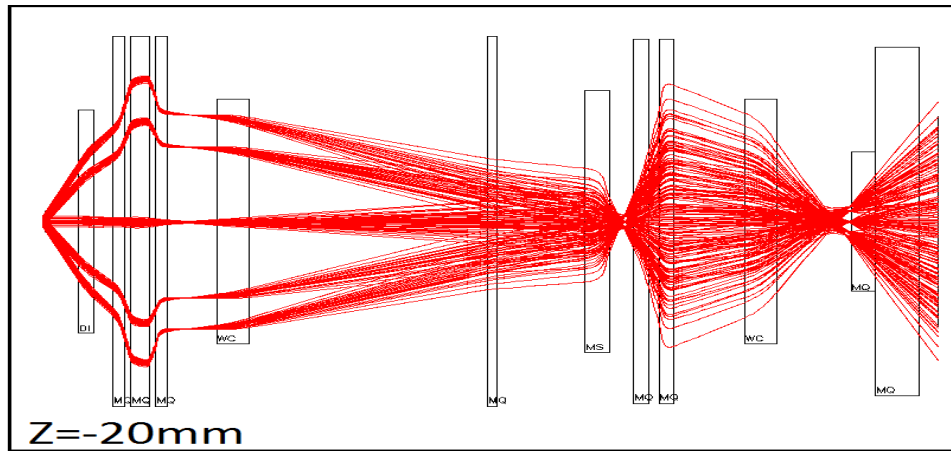
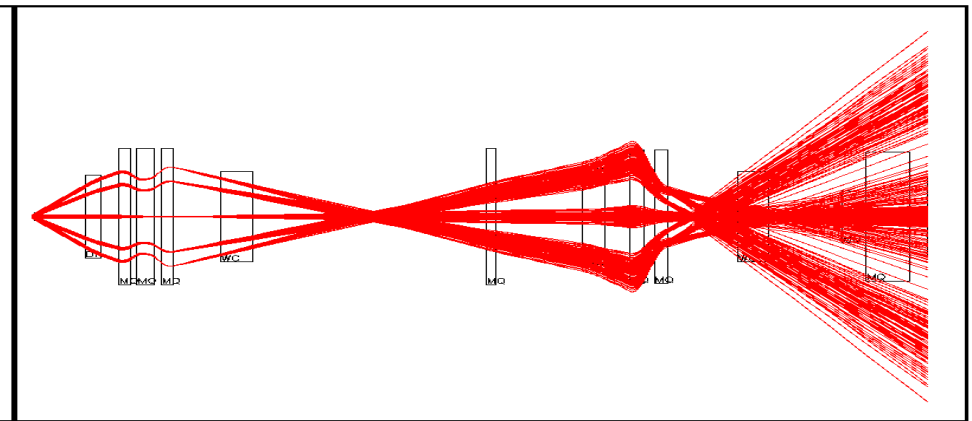
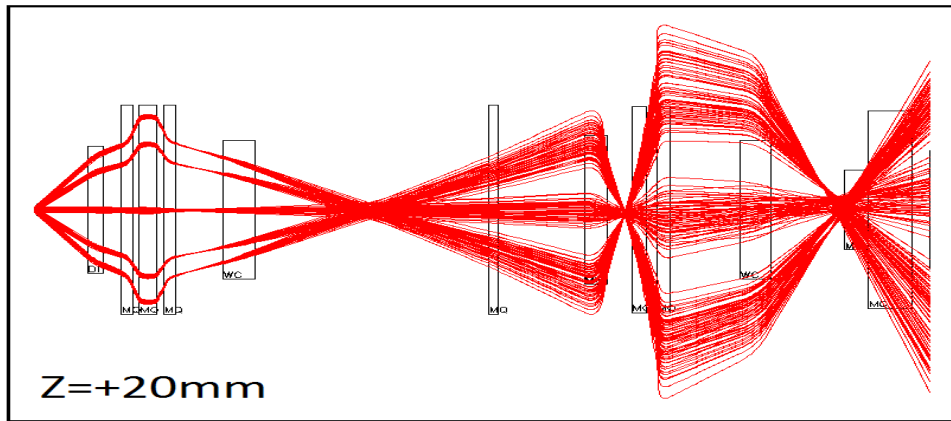
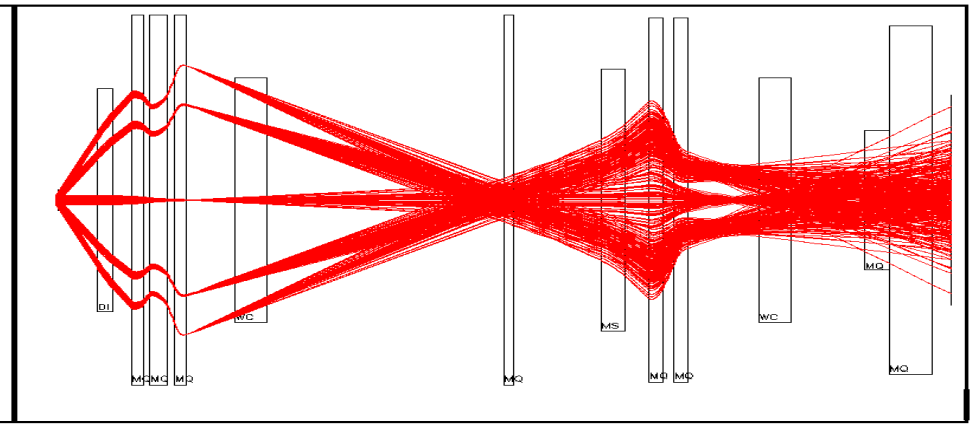
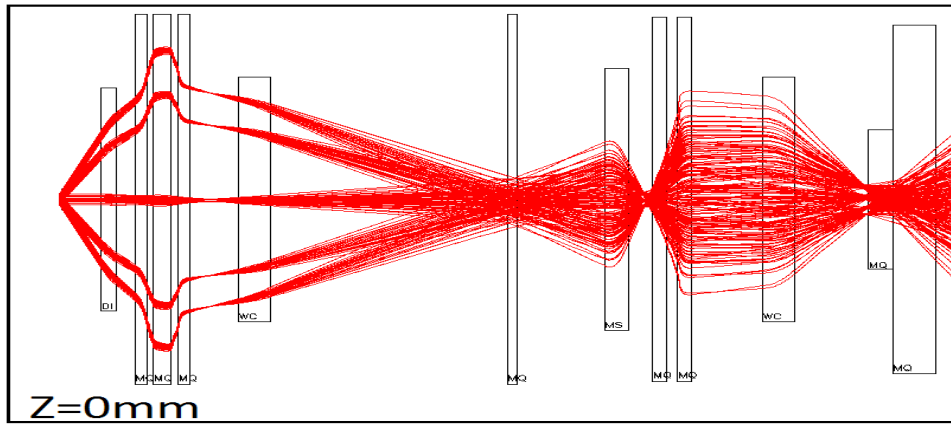
^{16}O level scheme and reaction energies



Estimation on the constrains on the target length (COSY)

Horizontal

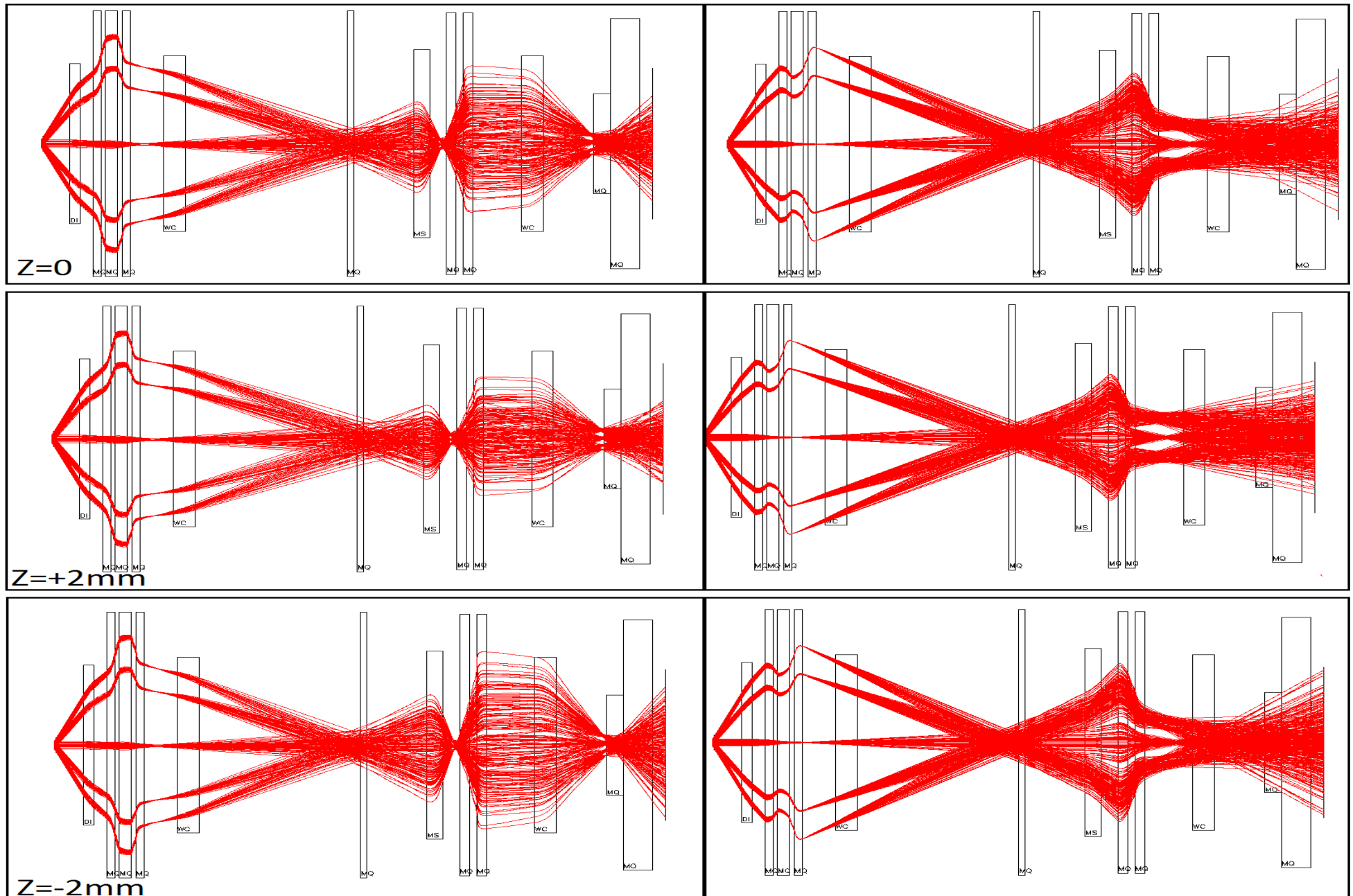
Vertical

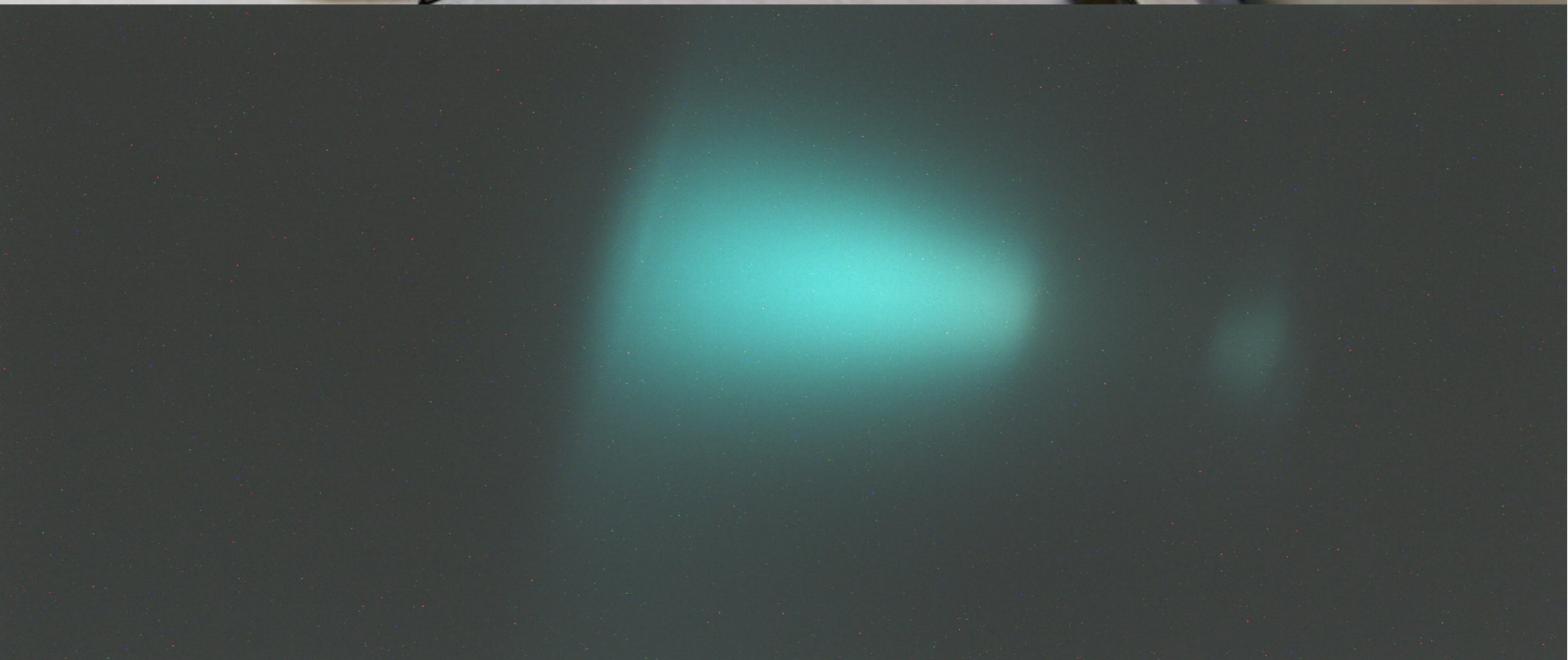
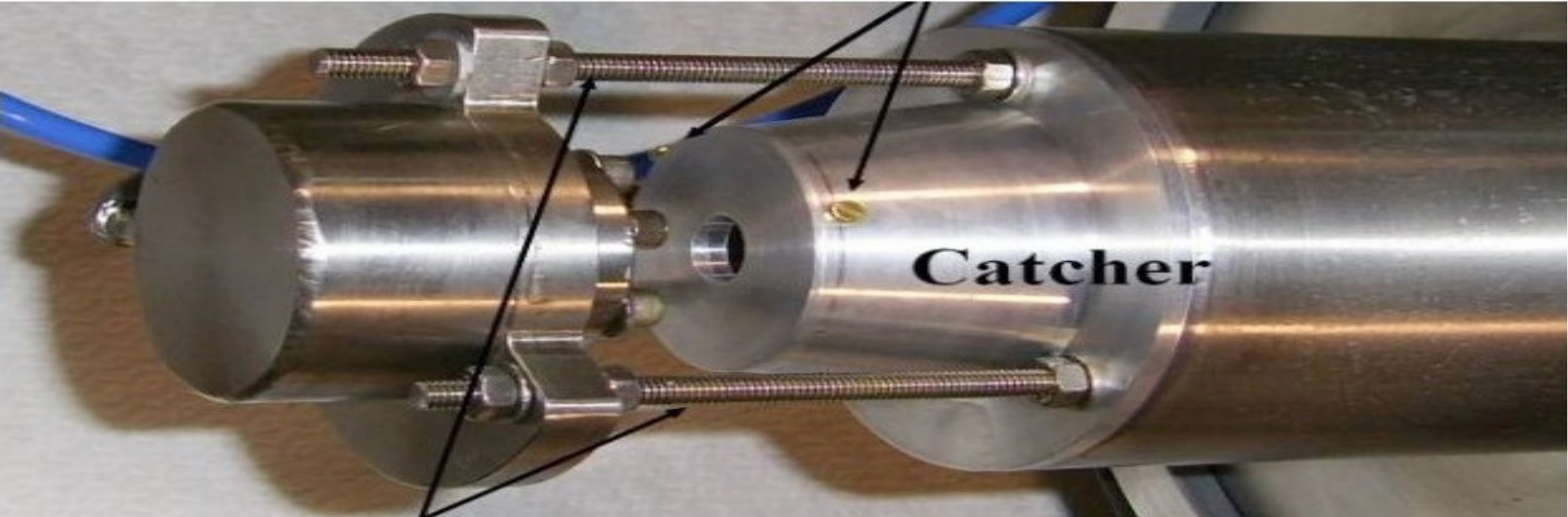


Estimation on the constrains on the target length (COSY)

Horizontal

Vertical





Steps

- Target's behaviour simulation and design of the new system (ANSYS Fluent)
- Detectors design and arrangement (GEANT4)
- Upgrade of the line and measurement (ERNA)
- Data Analysis (R-Matrix extrapolation)