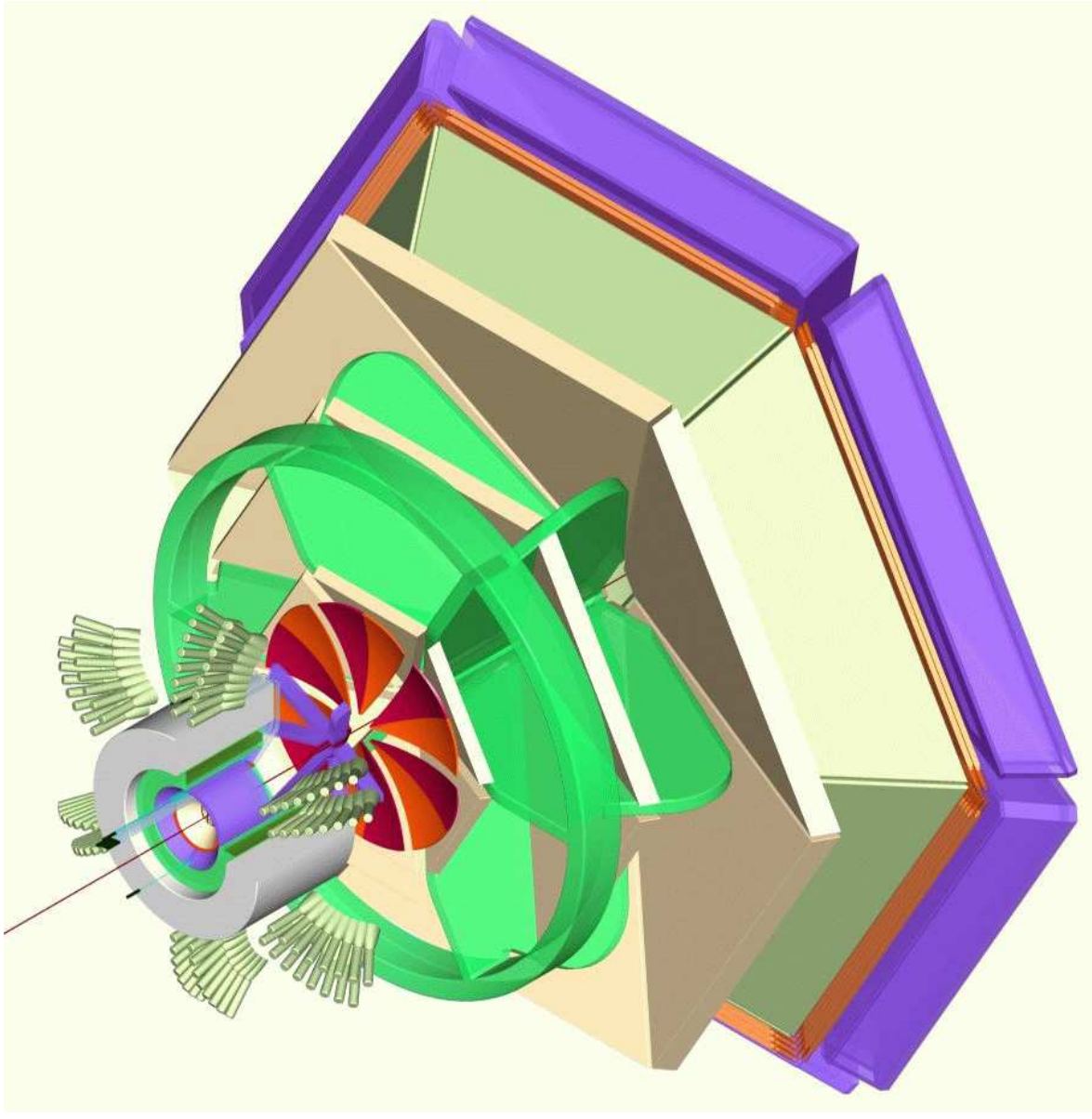
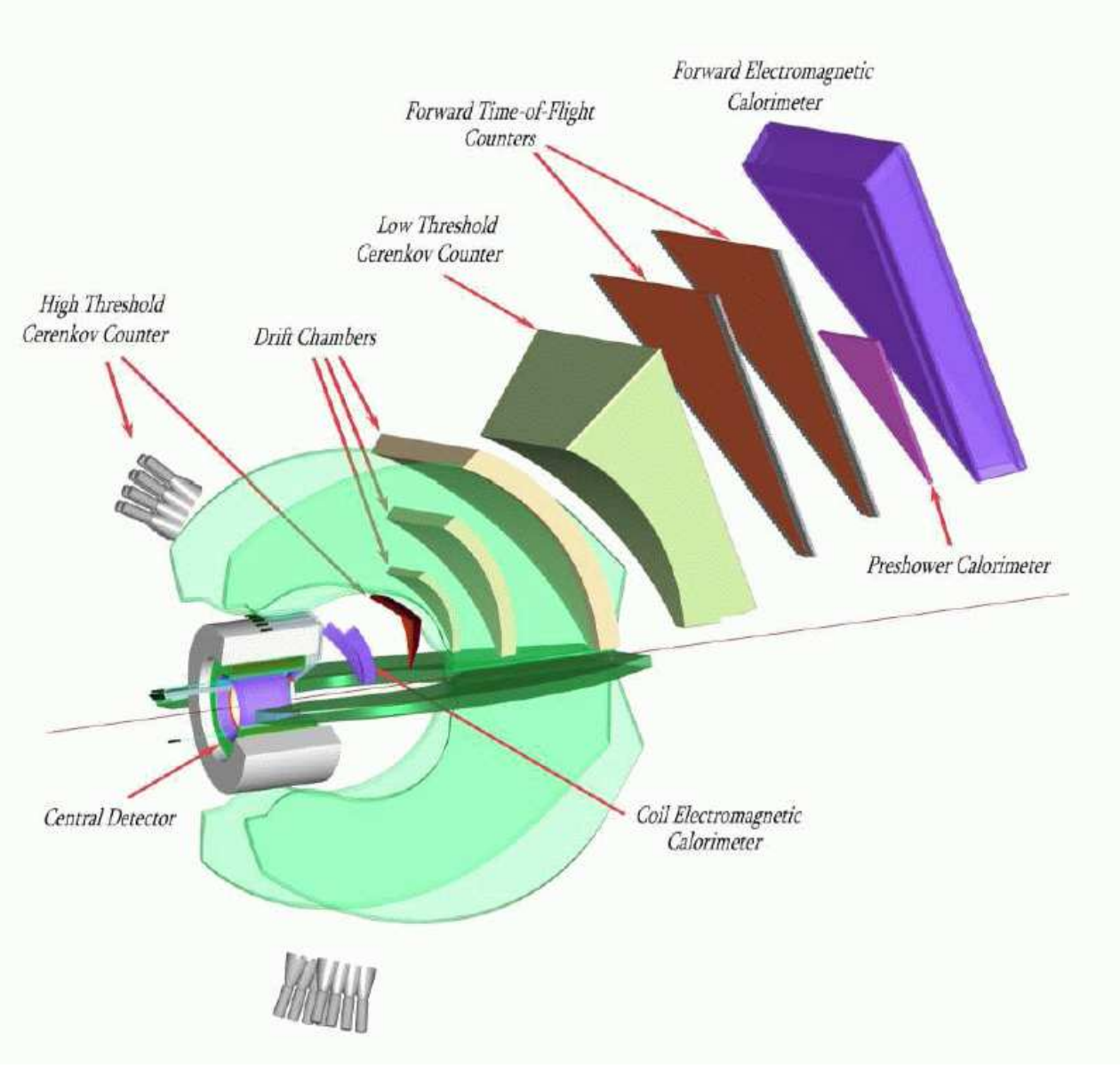
CLAS and the 12-GeV Upgrade

The primary goal of experiments using the CLAS12 detector at energies up to 12 GeV is the study of the internal nucleon dynamics by accessing the ucleon's generalized parton distributions (GPD's). This is accomplished through the measurement of deeply virtual Compton scattering (DVCS), deeply virtual meson production (DVMP), and single spin asymetries (SSA). Towards this end, the detector has been tuned for studies of exclusive and semi-inclusive reactions in a wide kinematic range. The large acceptance and high luminosity capabilities of CLAS12 are essential for this program. Inclusive processes, for which the unique properties of the Hall B instrumentation are essential, for example the study of the proton and neutron spin structure at high x using polarized solid state targets, or experiments requiring neutron tagging will be measured as well. The large acceptance of CLAS12 will be ideal for studies of quark hadronization in the nuclear medium. A novel way of studying the spectroscopy of hadrons is through the of hadron spectroscopy through forward electron detection.

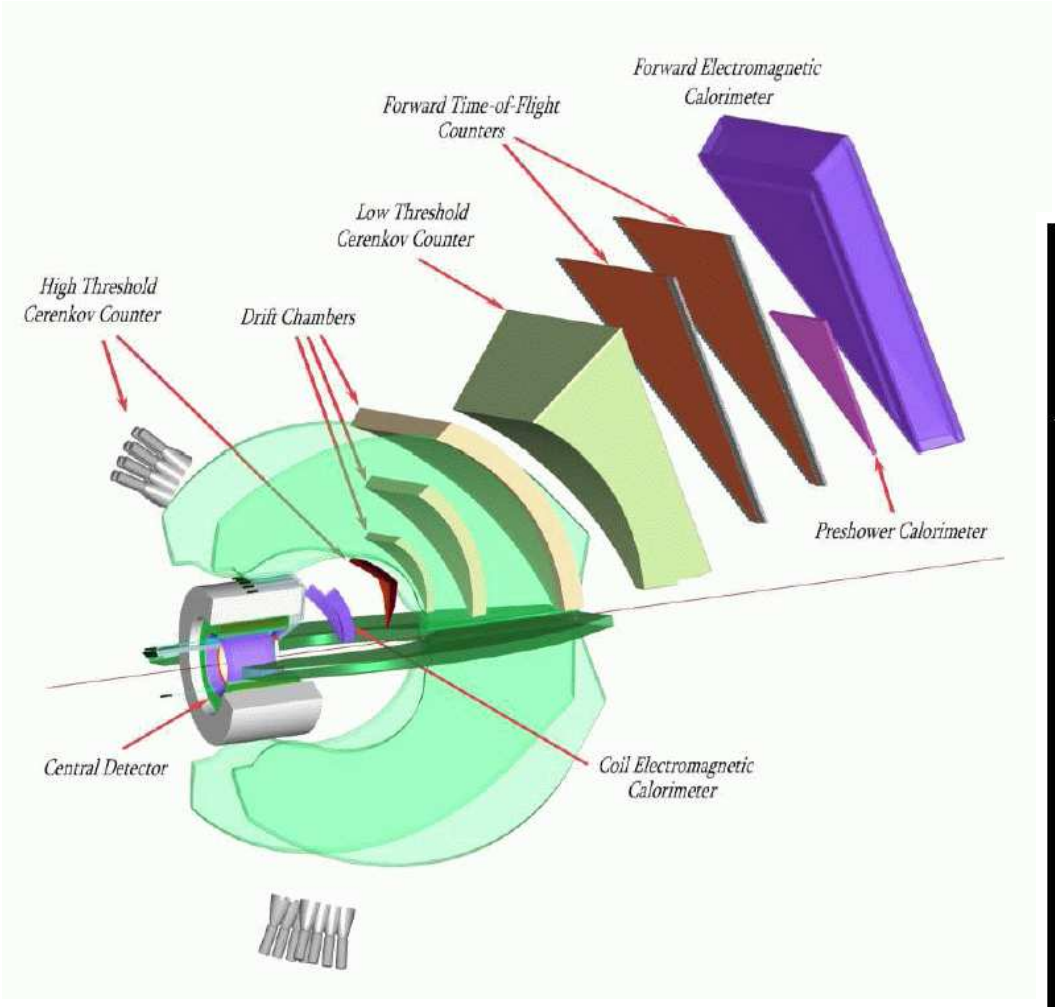
CLAS12 Concept

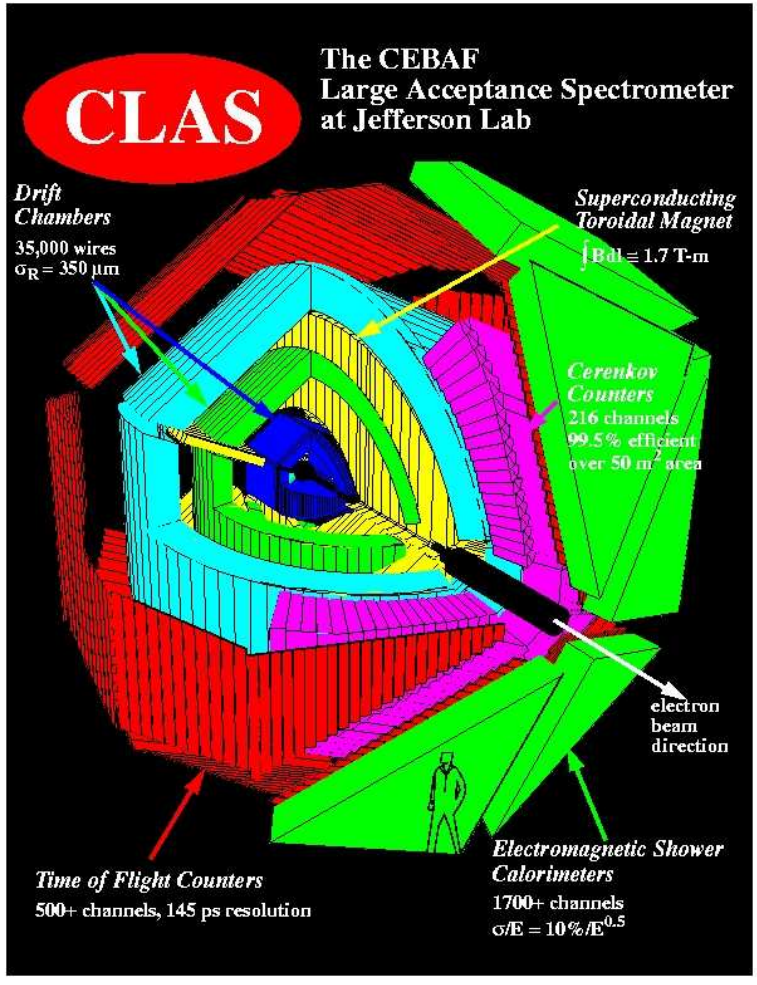


CLAS12 - Exploded View

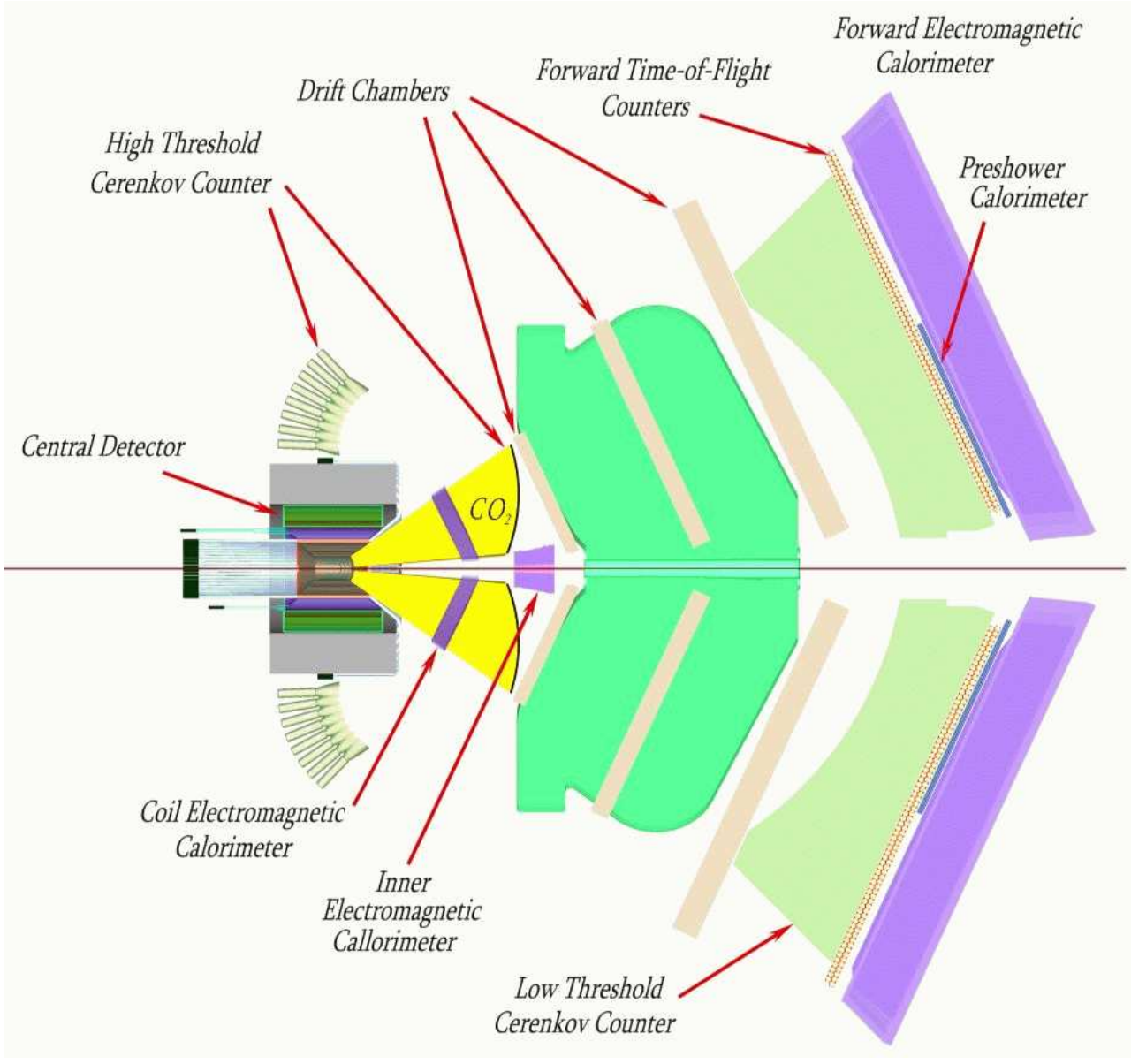


CLAS and CLAS12 - Exploded View

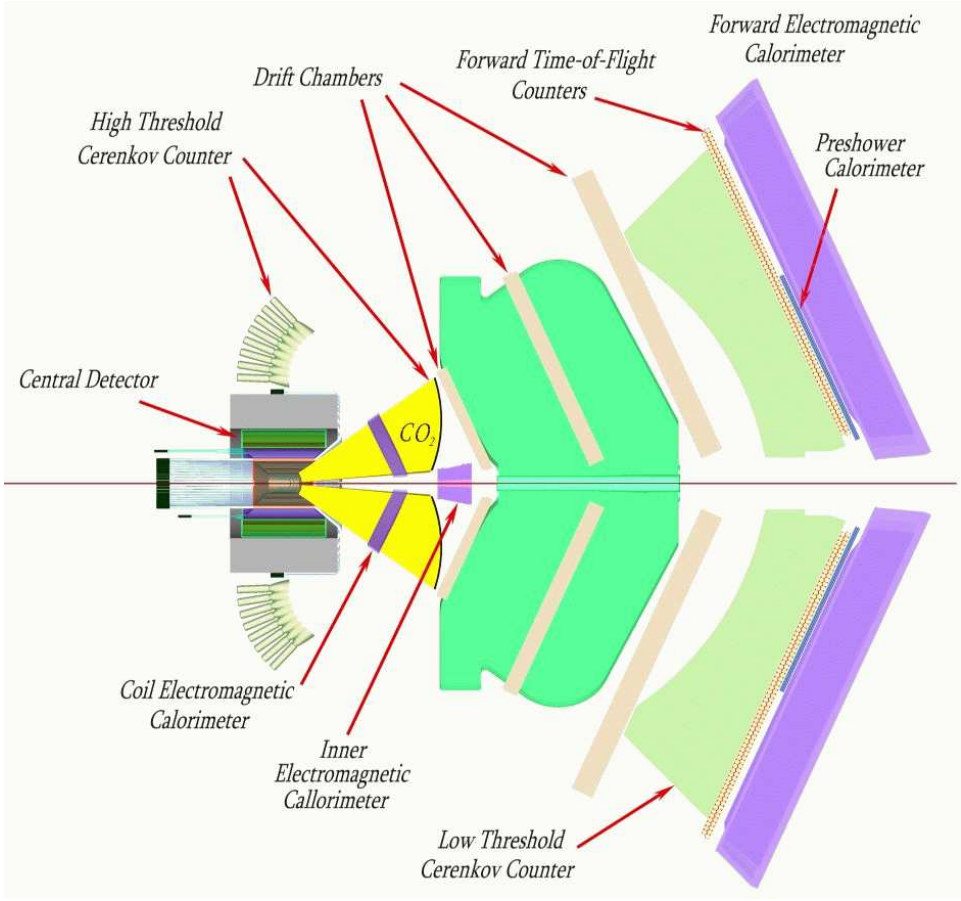


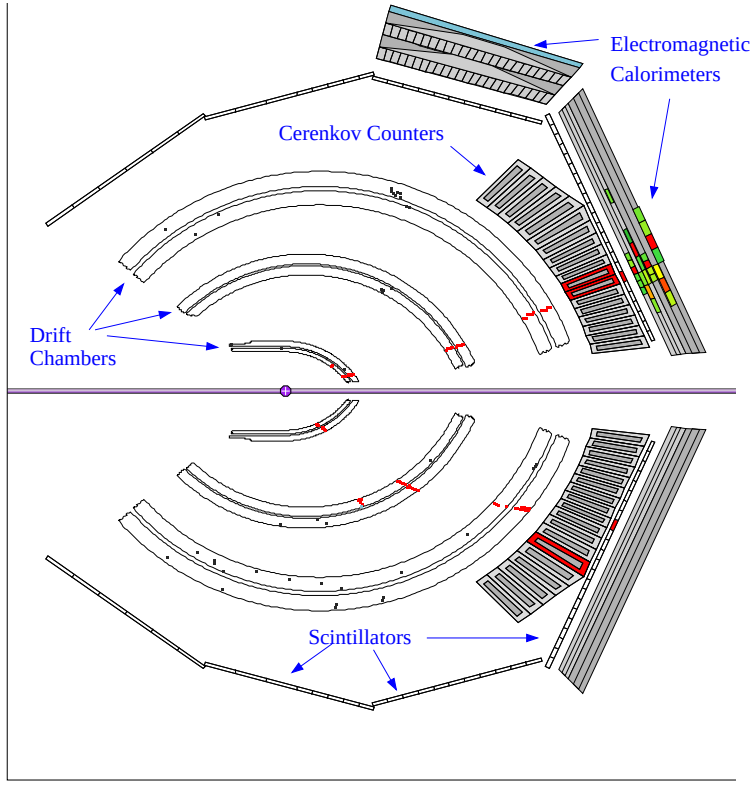


CLAS12 - Side View

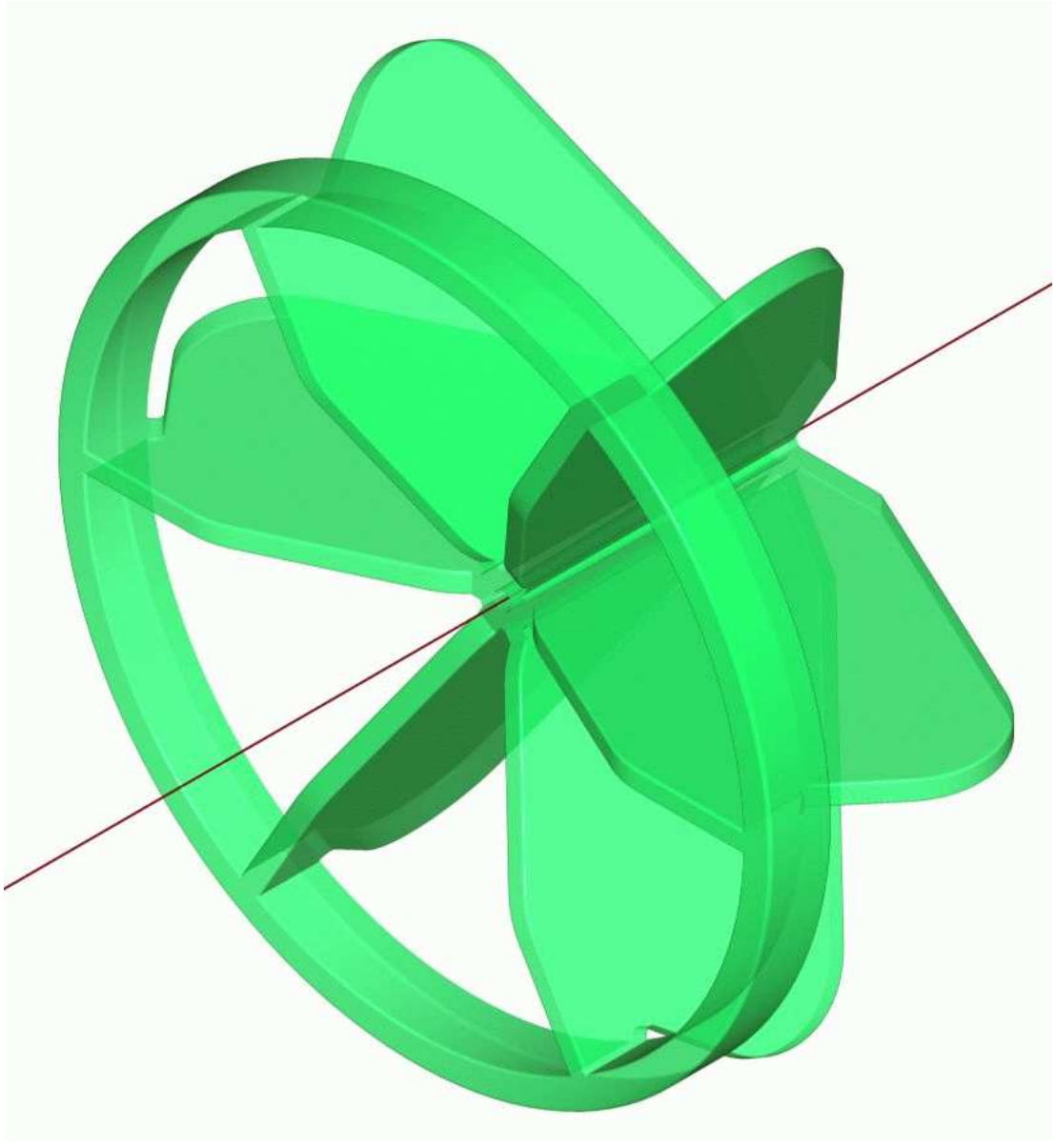


CLAS and CLAS12 - Side View

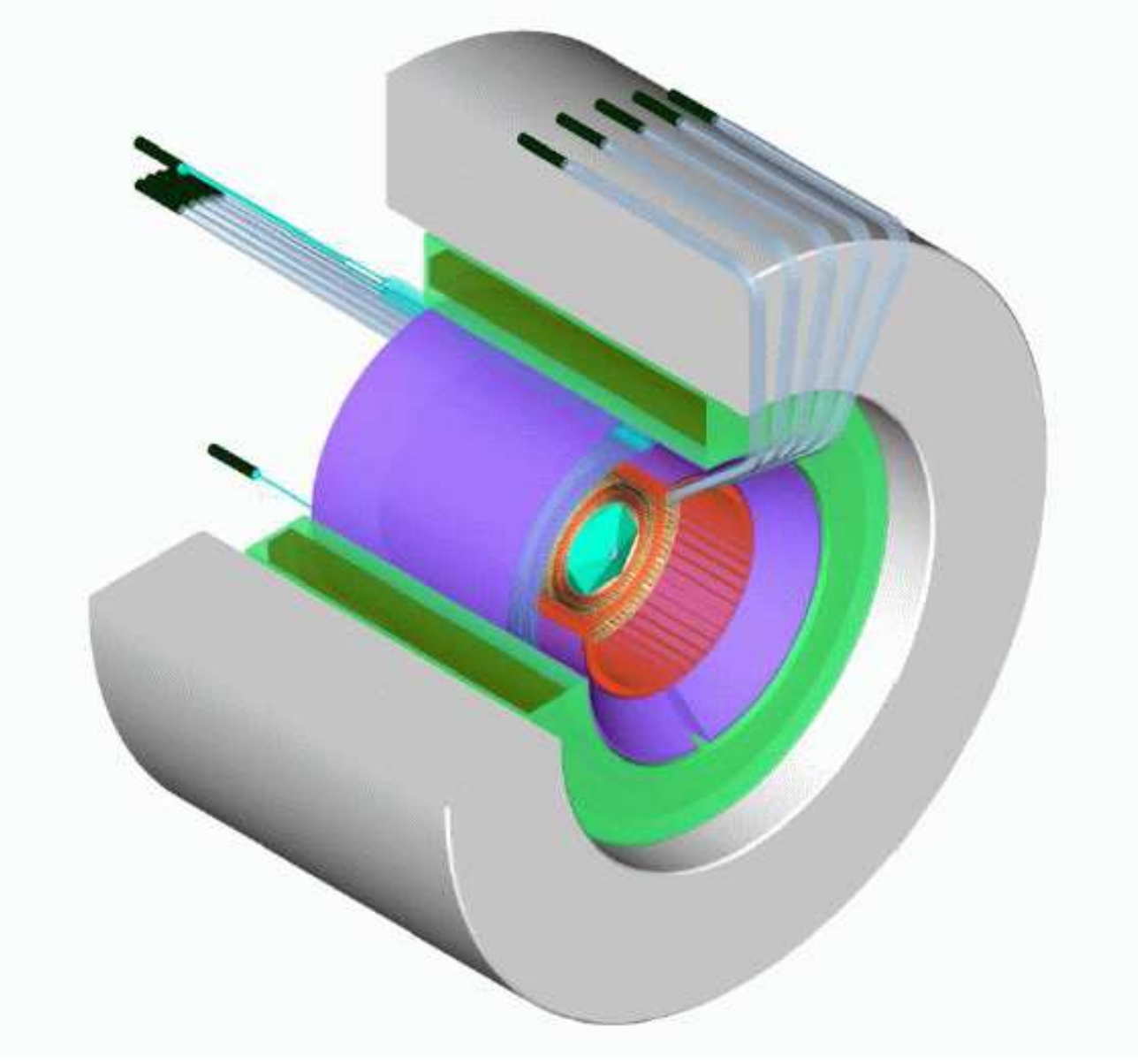




Torus Magnet



Central Detector



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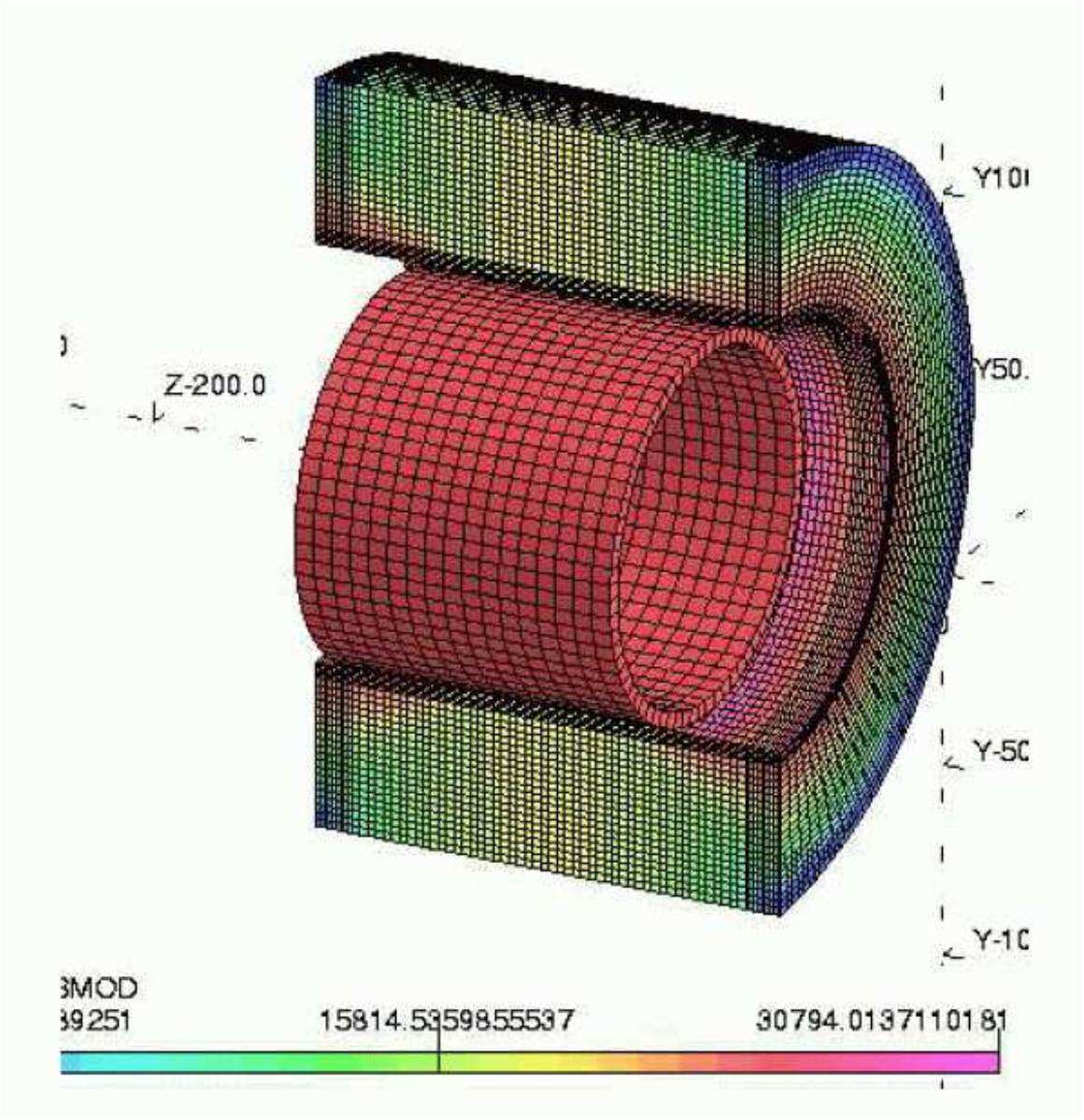

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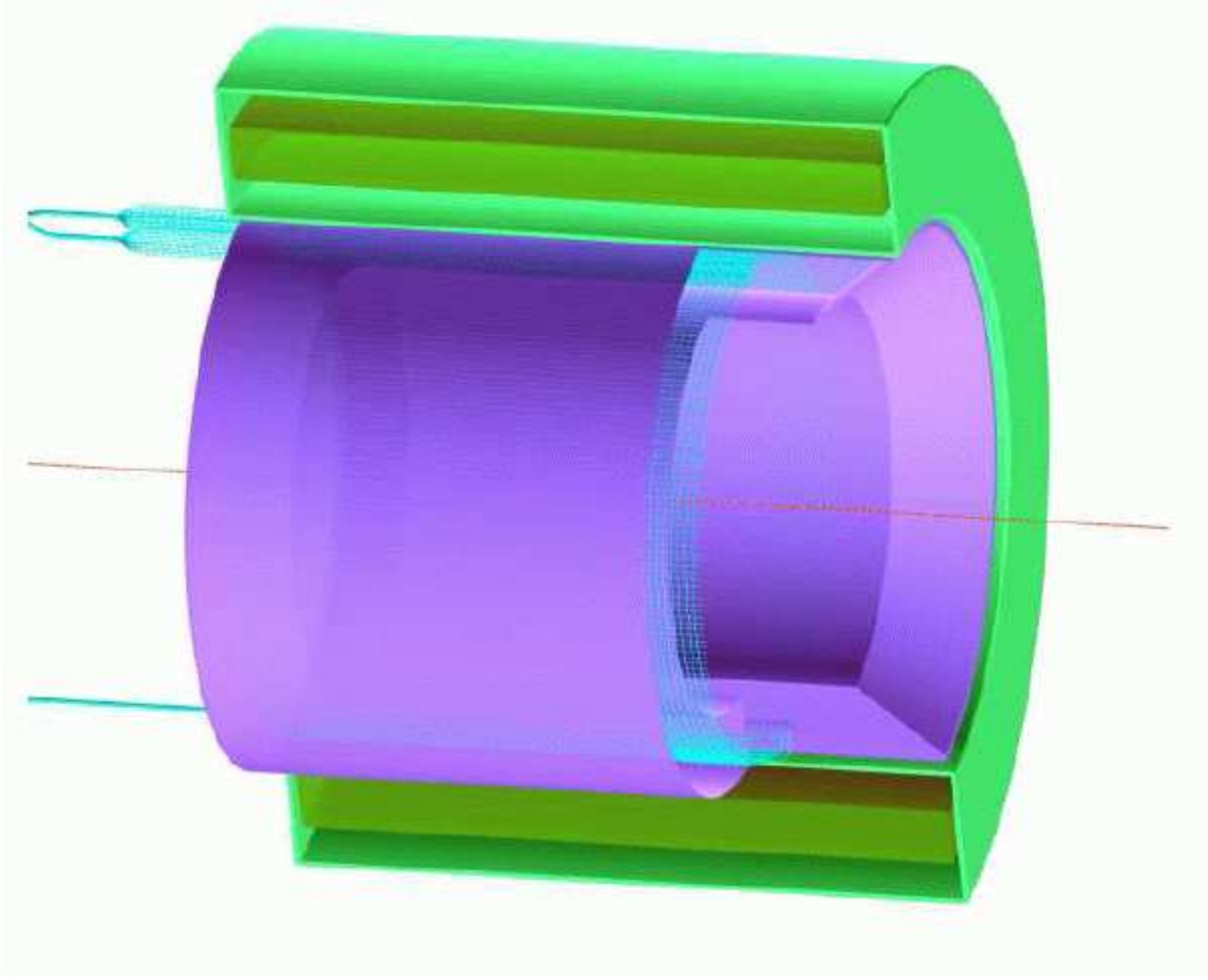

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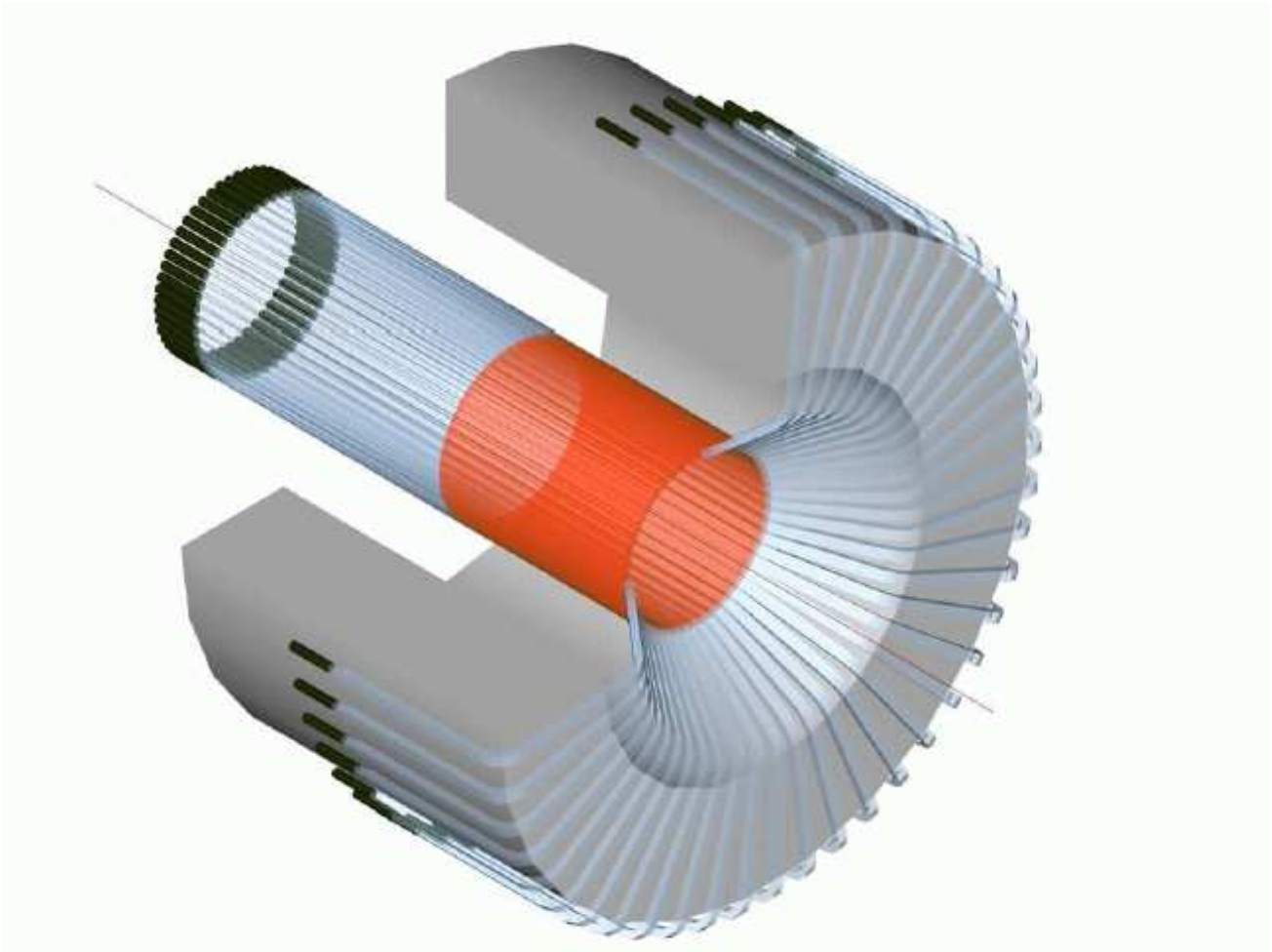
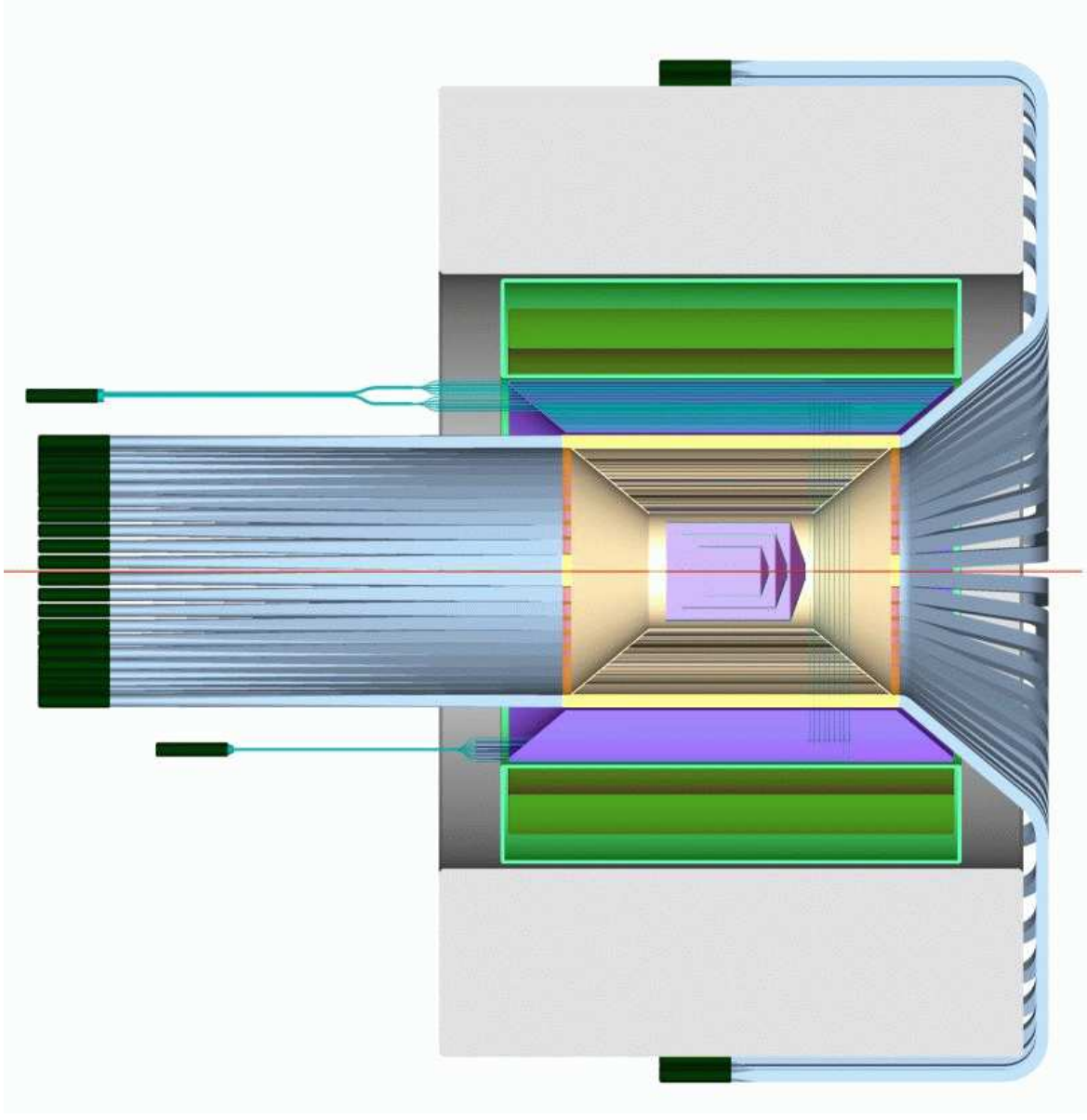


Figure 4.10: Perspective view of the central TOF system. Scintillator material shown in red color. In this option the scintillator light is transported to regions of reduced magnetic field using light guides (shown in translucent light blue color)

Central Detector



Electromagnetic Calorimeter