PREX II/ CREX Design Status

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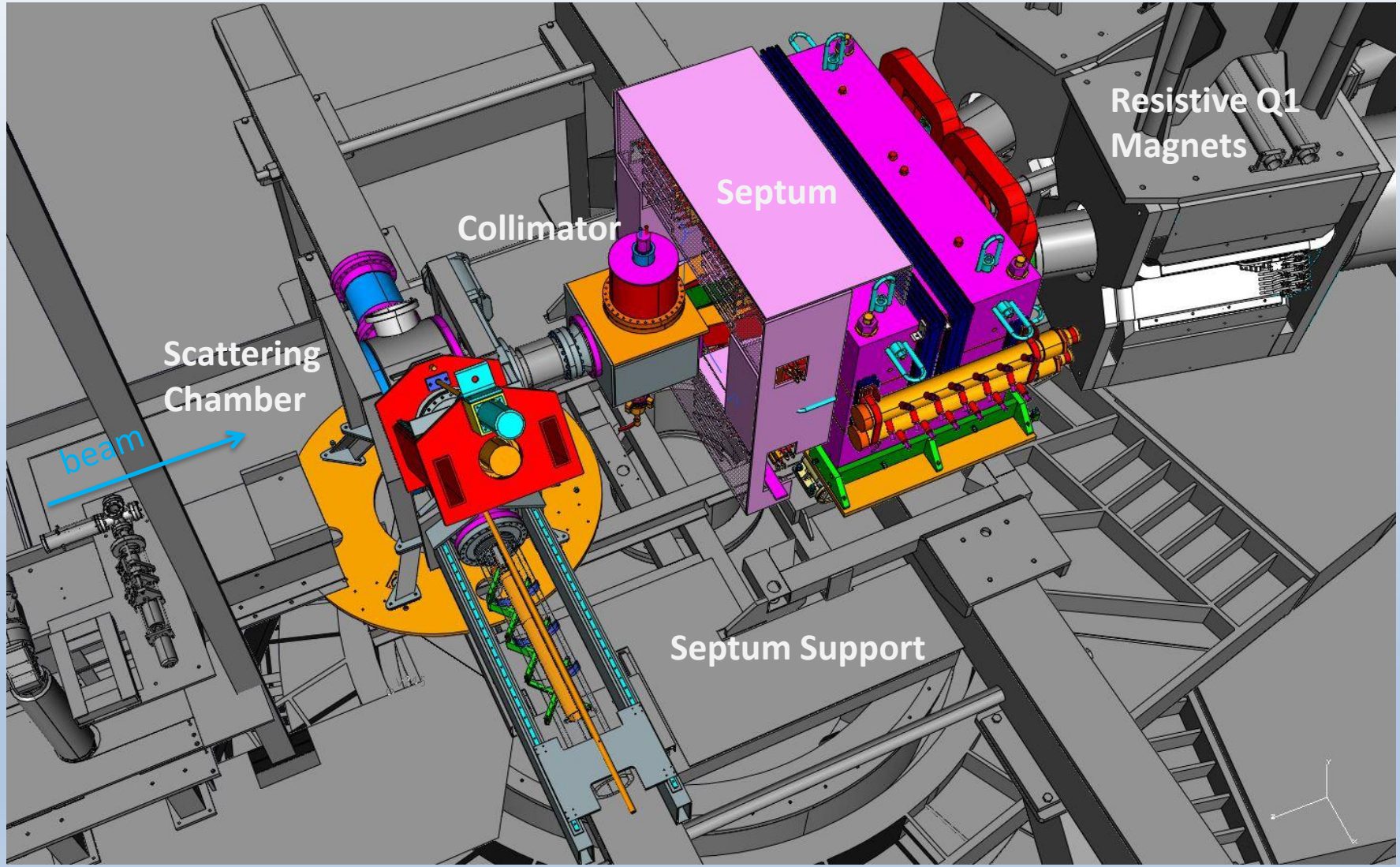
Components of PREX-II and CREX

- Scattering Chamber with Targets
- Septum Magnet
- Vacuum Chambers
- Collimator Box /Sieve Slit
- Collimator in Q1 entrance
- Magnetic Shielding of Beamline
- Radiation Shielding
- Structural supports

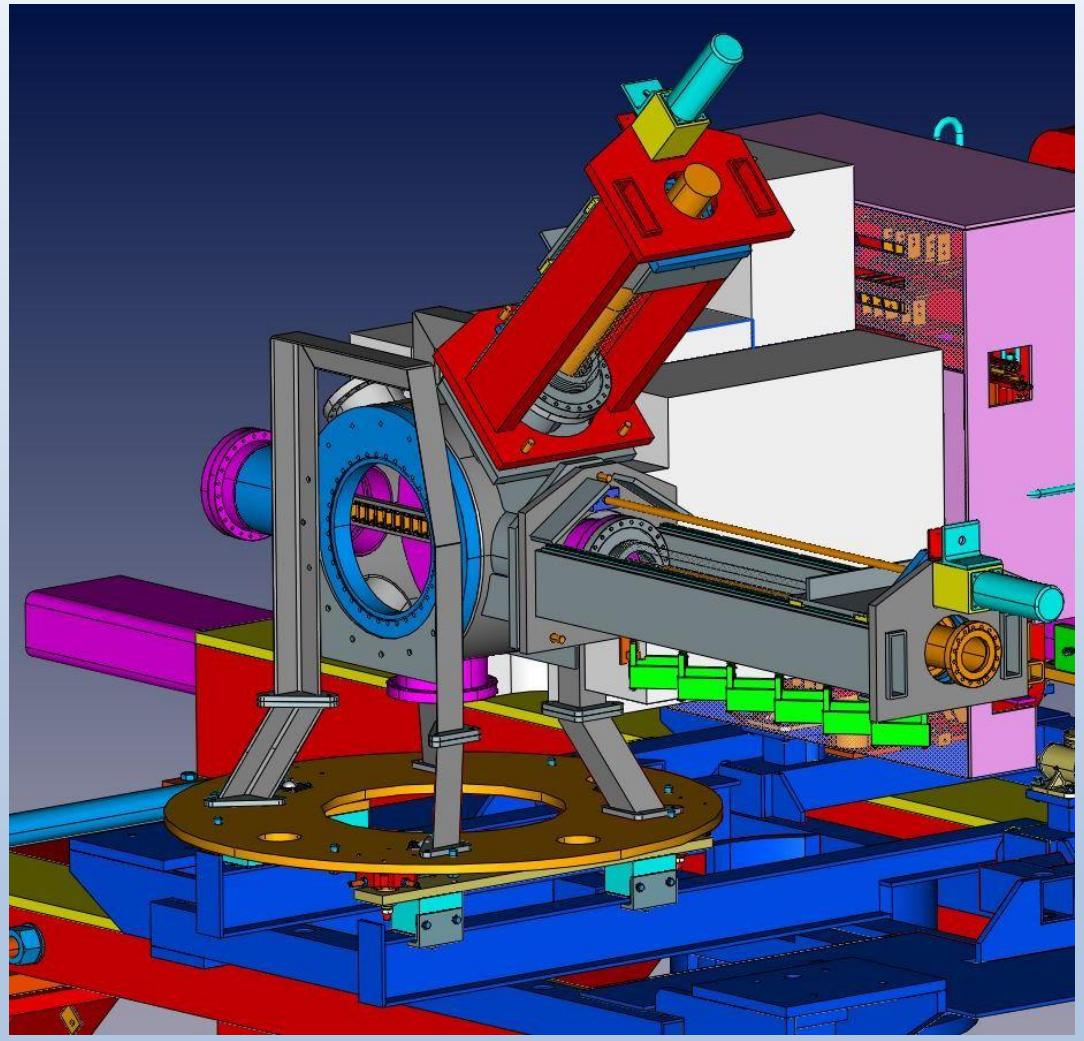
Requires 56 MW design and 24 MW engineering (target and scattering chamber not included)
We are looking at options to support this work. We may know more by end of October.

Hall Configuration



Status of Components

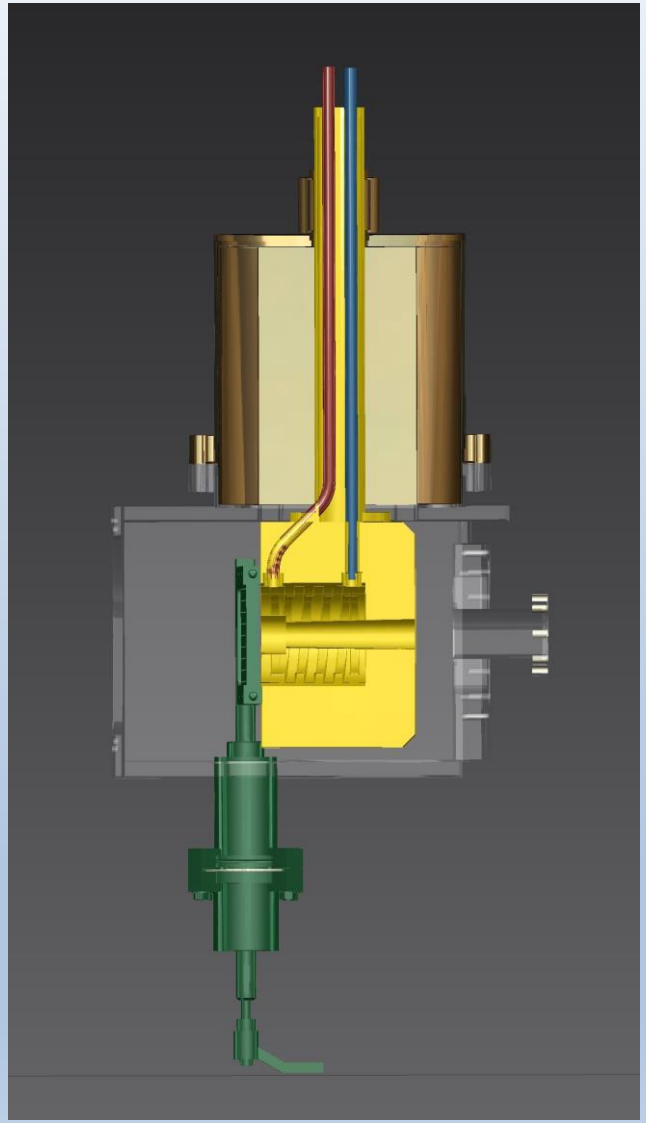
- **Scattering Chamber mount-design shows chamber supported on existing target mount. Existing mount designed with center of gravity of target over center of plate. Alignment cartridges will not work with offset load as configured.**



Status of Components

- **Collimator/Sieve Slit – Collimator is a modification of existing design used for Qweak experiment; water cooled Tungsten with Copper jacket. Water cooling from contained recirculating system.**
- **Design of Tungsten complete and being fabricated in in-house shop. Need to design box enclosure to incorporate remote release and removal of Tungsten while staying enclosed in shielding , sieve slits and support of box.**

- **Utilize existing Dynaflux R1000 cooler with cooling capacity of 4KW. Collimator requires 2 KW cooling. Cooler is recirculating system with 3 gallon reservoir.**



Status of Components

- **Septum Magnet**

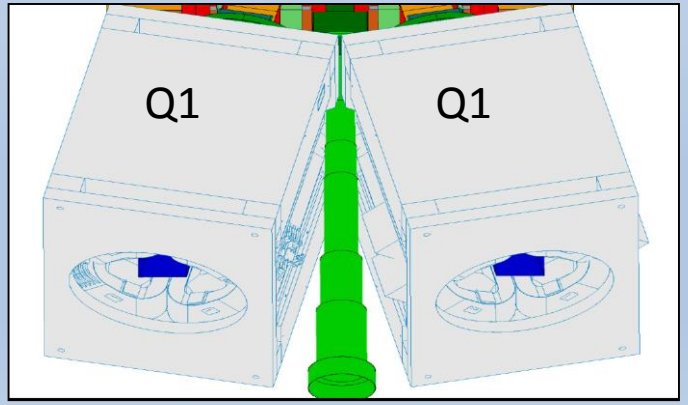
- **Utilizing existing septum with design configuration of 3 sets of coils and shims. Coil replacement on order, delivery expected May 2018.**
- **Using existing shims ?**

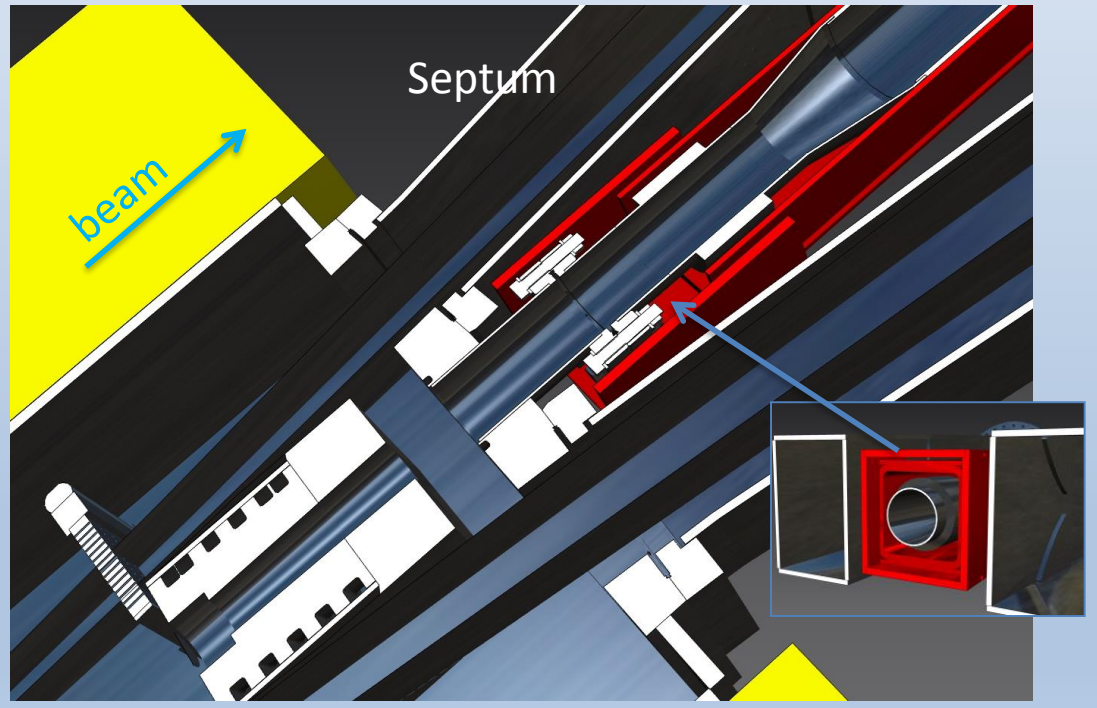
Status of Components

- **Power Supply- Using existing power supply for septum magnet.**

- **Beam line – Using existing beam line with addition of magnetic shielding around bellows upstream and downstream of septum magnet. Shielding of beamline between Q1 magnets either by addition of clamshell pieces or replace beamline section.**

Red is magnetic shielding around beam pipe



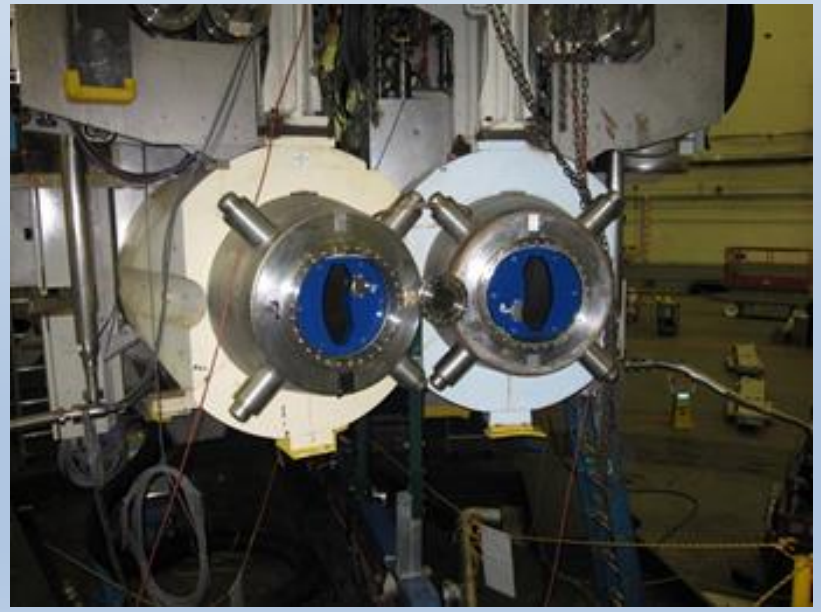


Top view with cut thru midplane at septum entrance

Status of Components

- **Vacuum Chambers – New chambers are required through septum to HRSs. Design started but needs more work to make proper vacuum connections.**

- **Collimator in entrance of Q1 – New design to accommodate size of resistive SOS Q1 magnet entrance. Otherwise simplified version of collimator used in PREX.**



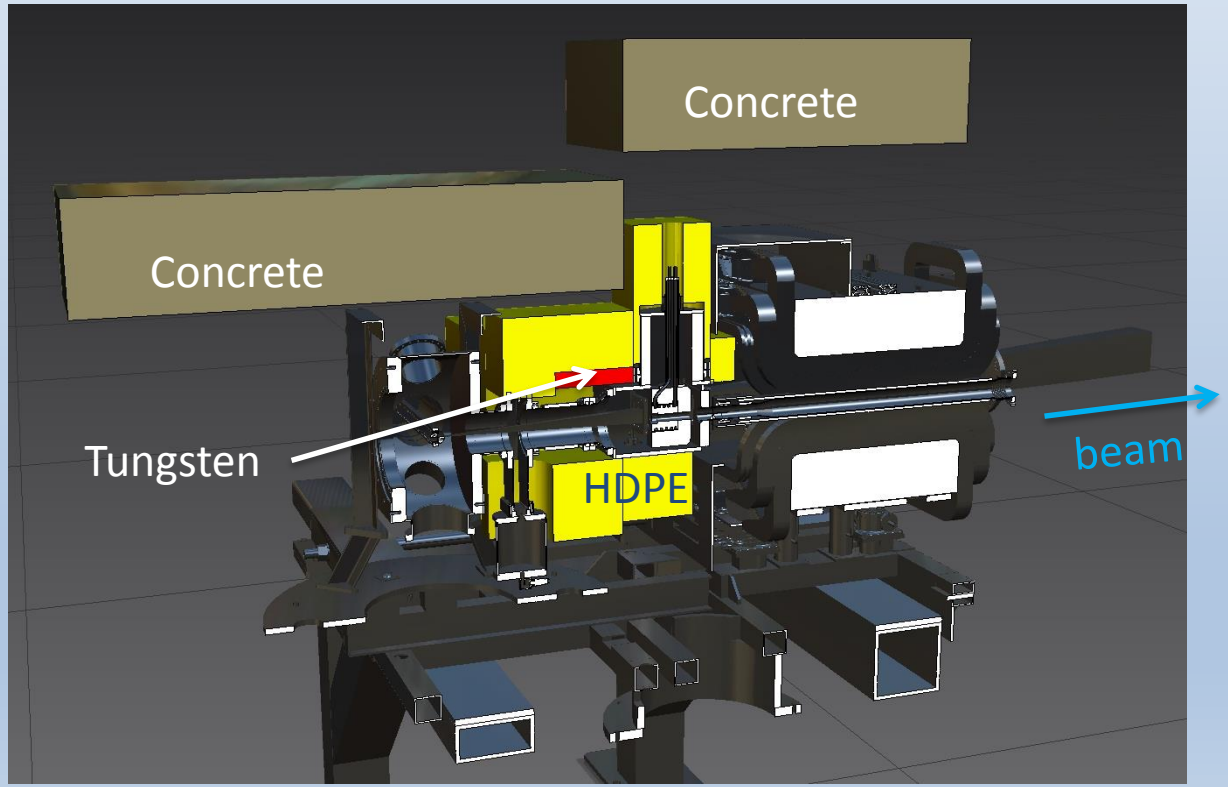
Status of Components

- **Septum support – Trying to use existing support as used previously for PREX. Requires addition of structural members to transfer load of shielding to links or floor below. Evaluating limits of structure and assembly method restrictions.**
- **Shielding – Shielding volumes and materials incorporated into configuration.**

(345 lb Tungsten, 1186 lb HDPE)

Added sky shine shielding.

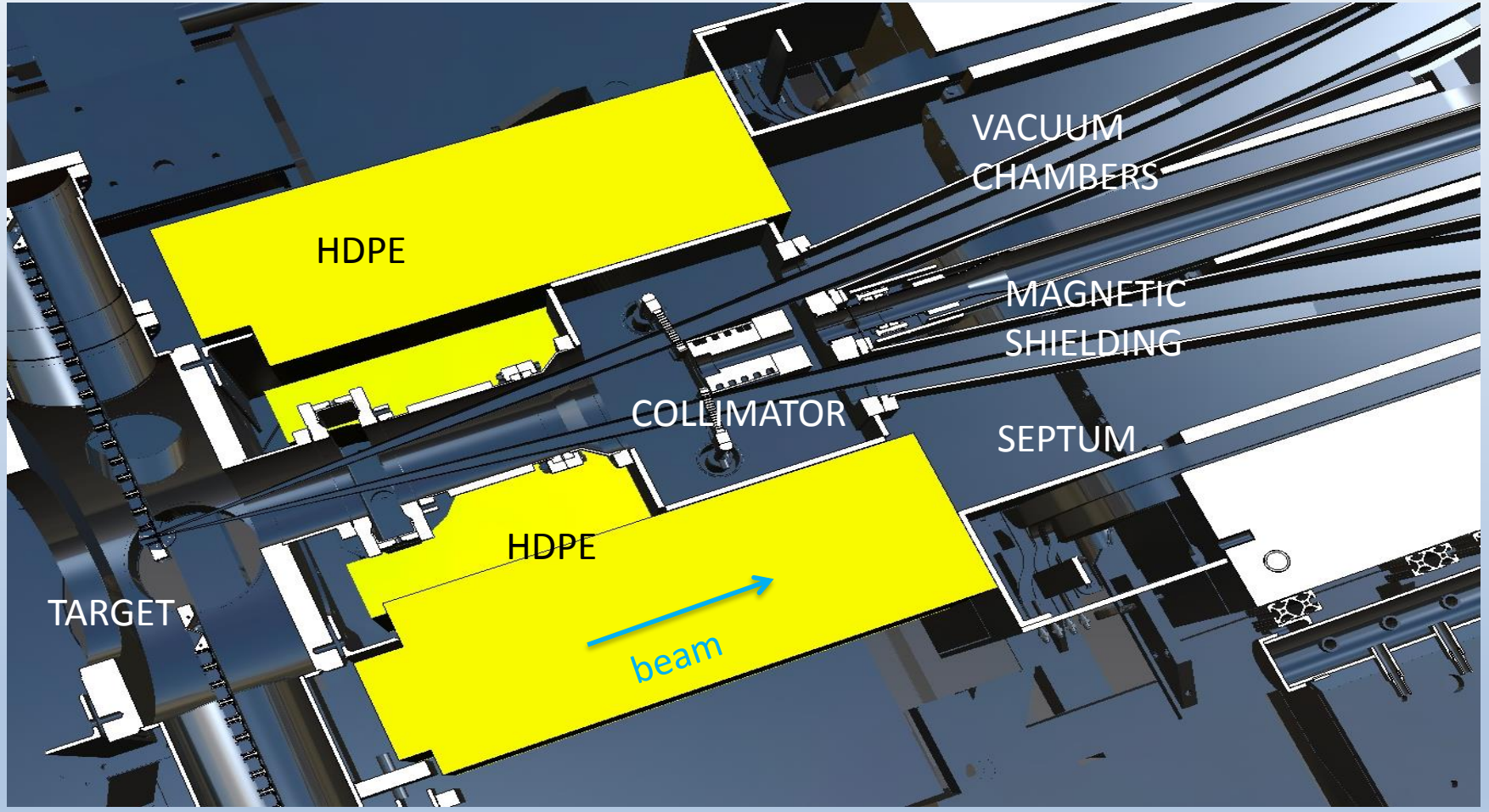
(3.7 ton concrete)



Side view with cut through midplane

Status of Components

Shielding components



Top view with cut through midplane

Additional view in Hall with shielding