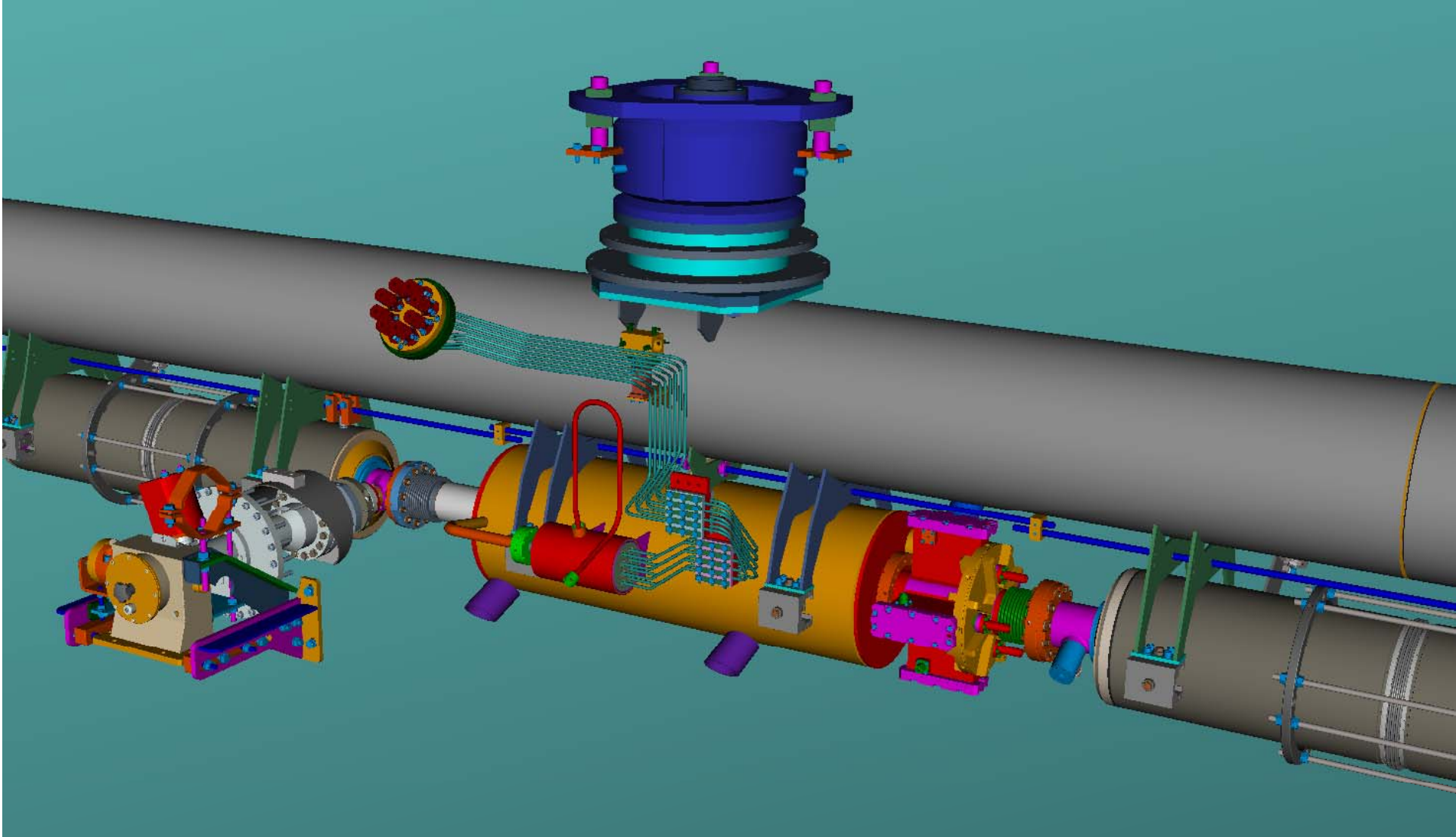


Alignment of the Quadrupole

Norihito Ohuchi

Designed Quadrupole Package for Type 4

by Don Mitchell



Requirement for the Quadrupole alignment

- Alignment tolerance

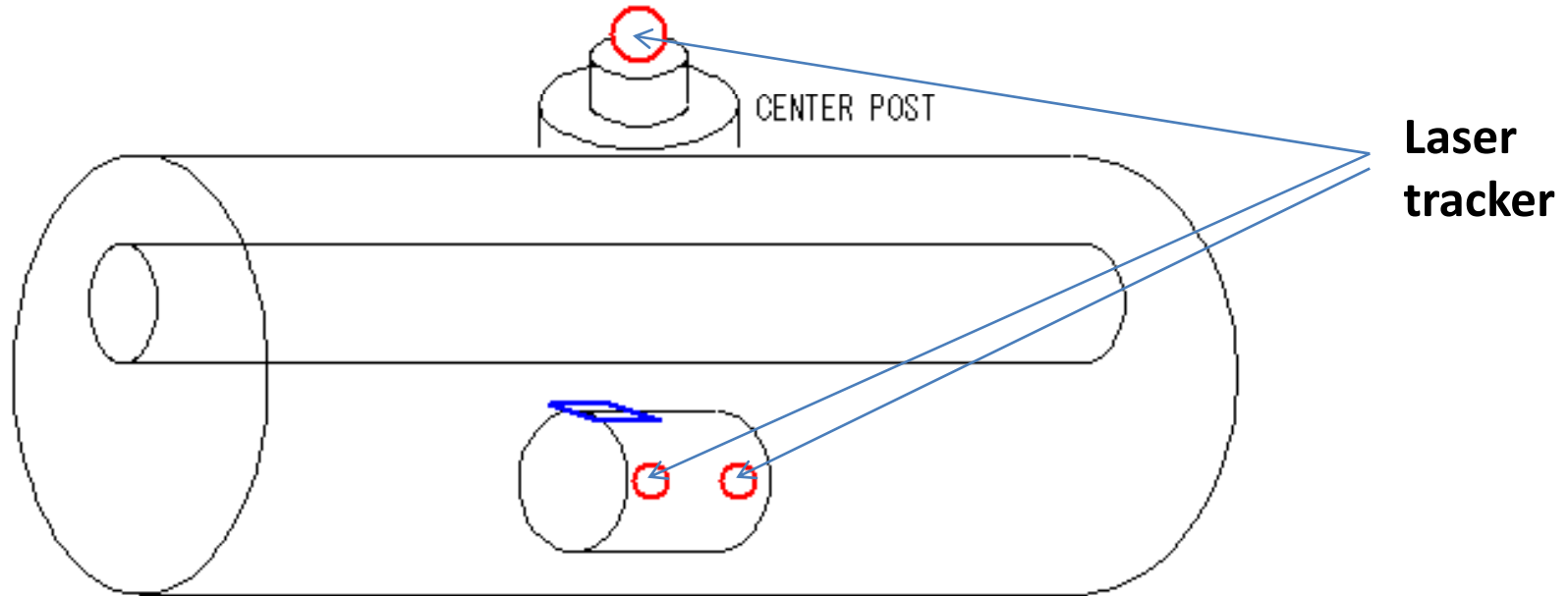
- Offset of magnet center : +/- 0.3 mm
- Quadrupole angle rotation : +/- 0.3 mrad
 - The tolerance corresponds to +/- 35 μm on the cylinder surface of outer diameter of 250 mm.

- Magnet type

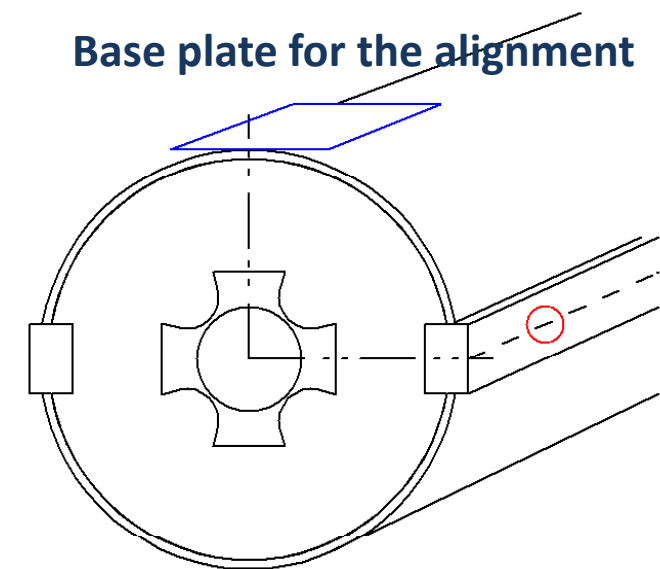
- Super-ferric : magnetic field profile is defined by the iron yoke shape
- The magnetic center can be found by the mechanical fiducials within the machining precision of the iron yoke.
- The magnet has the mechanical fiducials which are fixed by the iron yoke like a wedge.

- Magnet center

- Before the installation into the cavity string, the magnetic center is transferred on the mechanical fiducials at room temperature.
- After the installation, the magnetic center measurement is not performed.



- The alignment origin is the center of the fiducial (laser tracker target) on the center post.
- The quadrupole center is defined by the fiducials on the quadrupole vessel from the origin by the laser tracker.
- The quadrupole angle is aligned with the surface on the quadrupole vessel.
- The connection supports between the quadrupole and the gas return pipe have the positioning mechanism.



Homework

- Make the documentation of the assembly and the alignment of the quadrupole at the center post.
 - February (Ohuchi, Carlo, Tsuchiya)