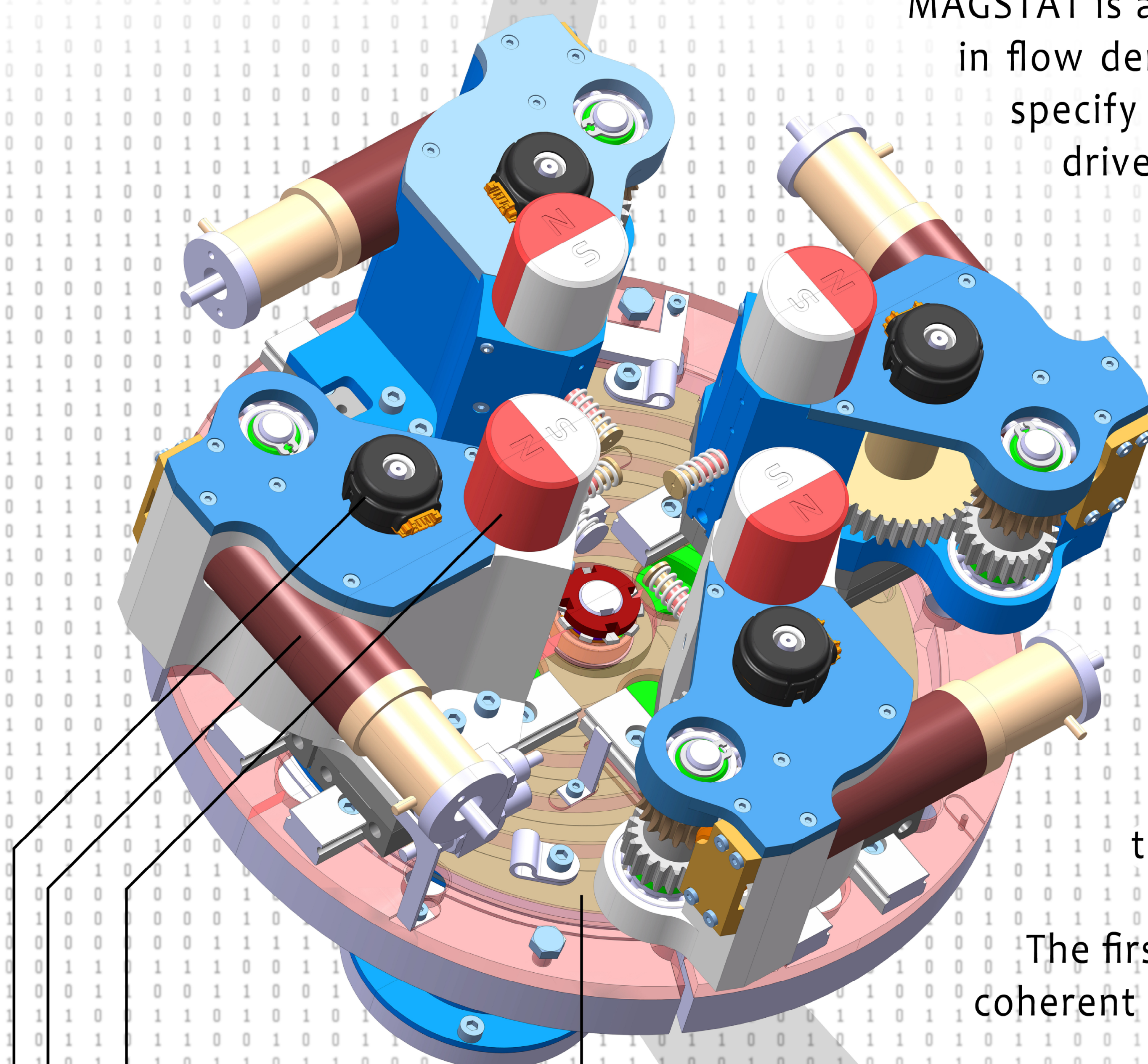


MAGSTAT is a quadrupole designed to magnetize samples with a variable magnetic field in flow density and in directions. Four rotary permanent magnets allow the user to specify a direction for the field and changing in situ the gap between the poles drives the field intensity.

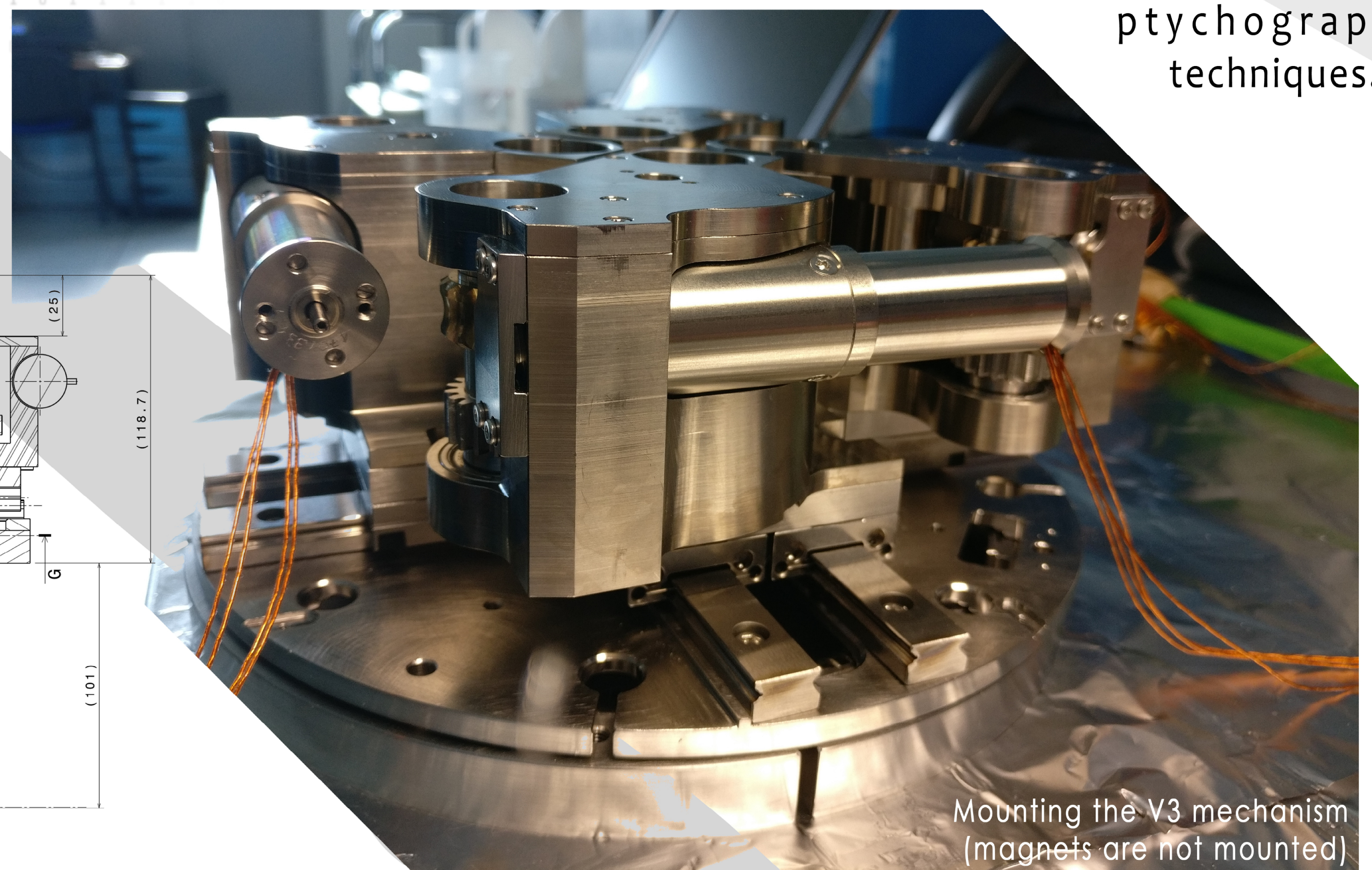
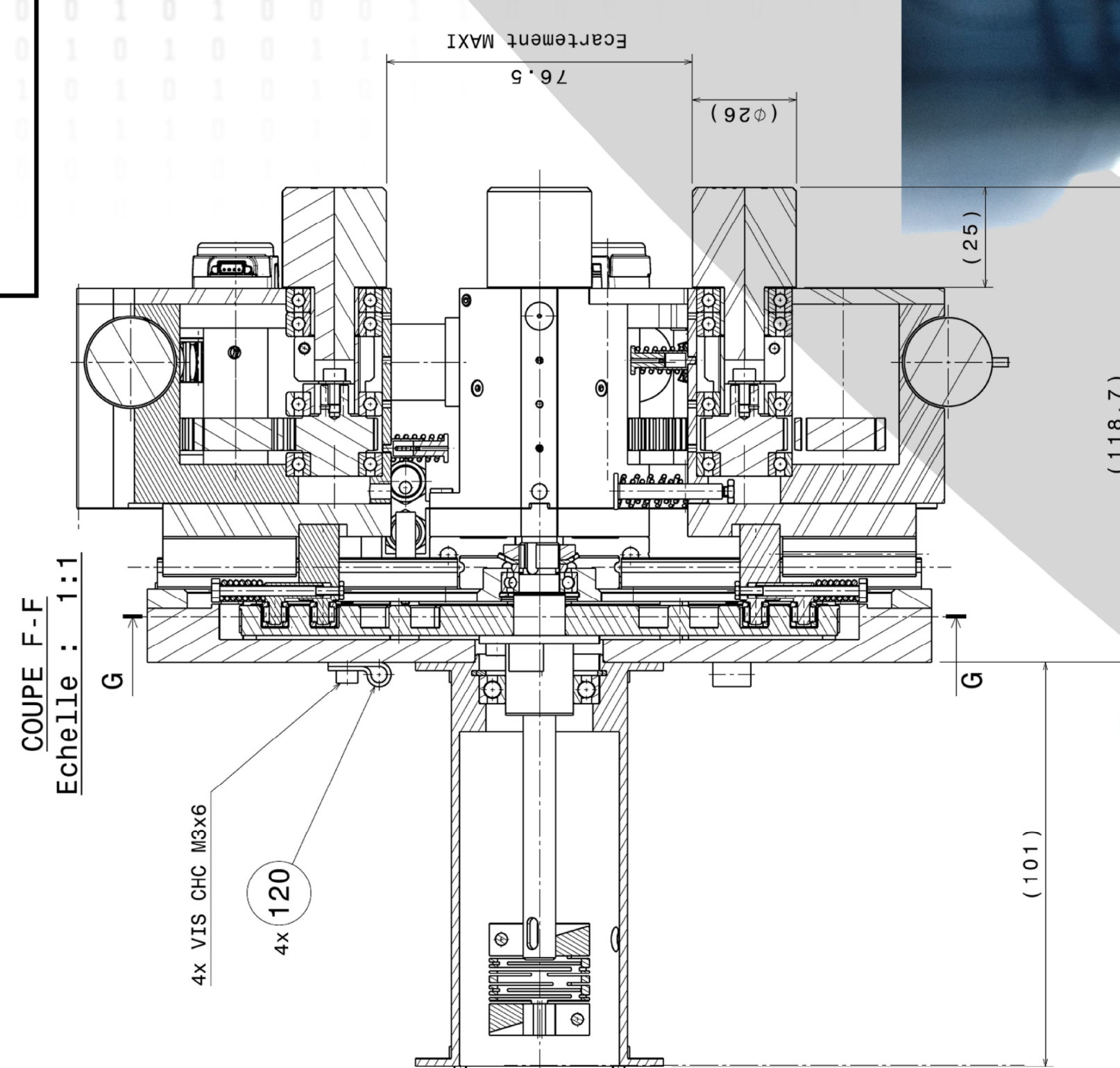
The first prototype was realized in 2016 on the SEXTANTS beamline in the framework of SOLEIL-MAXIV collaboration; a second version has been manufactured for MAXIV SoftImax beamline. This third version shows a significant evolution of the mechanical design, guaranteeing a much better stiffness in high field configurations.

Samples up to Ø74mm can be placed in this quadrupole, and the tiny ones which may fit in a Ø10mm circle or smaller, can be magnetized with a 1T local field. The angle of each magnet is driven by a dedicated stepper motors with a big reduction ratio. The total gap is ensured by a single motor, and its motion is symmetrically transferred to the magnets through an Archimedeian spiral.

The first prototype is installed permanently at COMET endstation dedicated to the coherent scattering of soft X-ray in transmission for imaging magnetic materials via the Fourier Transform Holography or ptychography techniques.



NdFeB Magnets  
Phytron VSS motors  
US Digital encoder  
Archimedeian spiral (green disc)



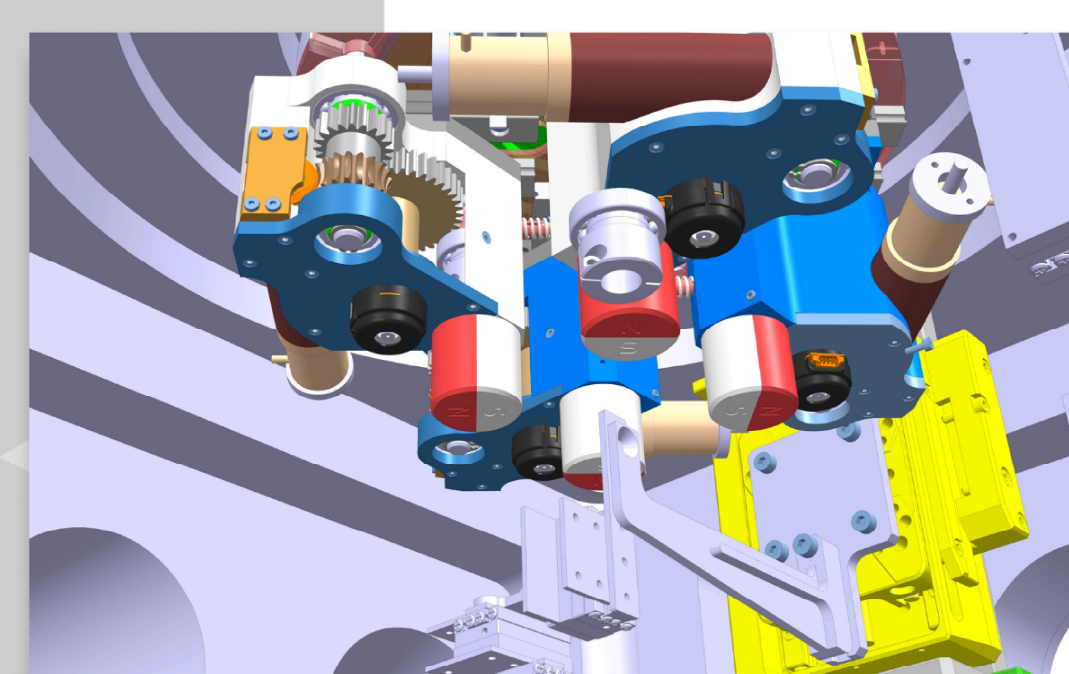
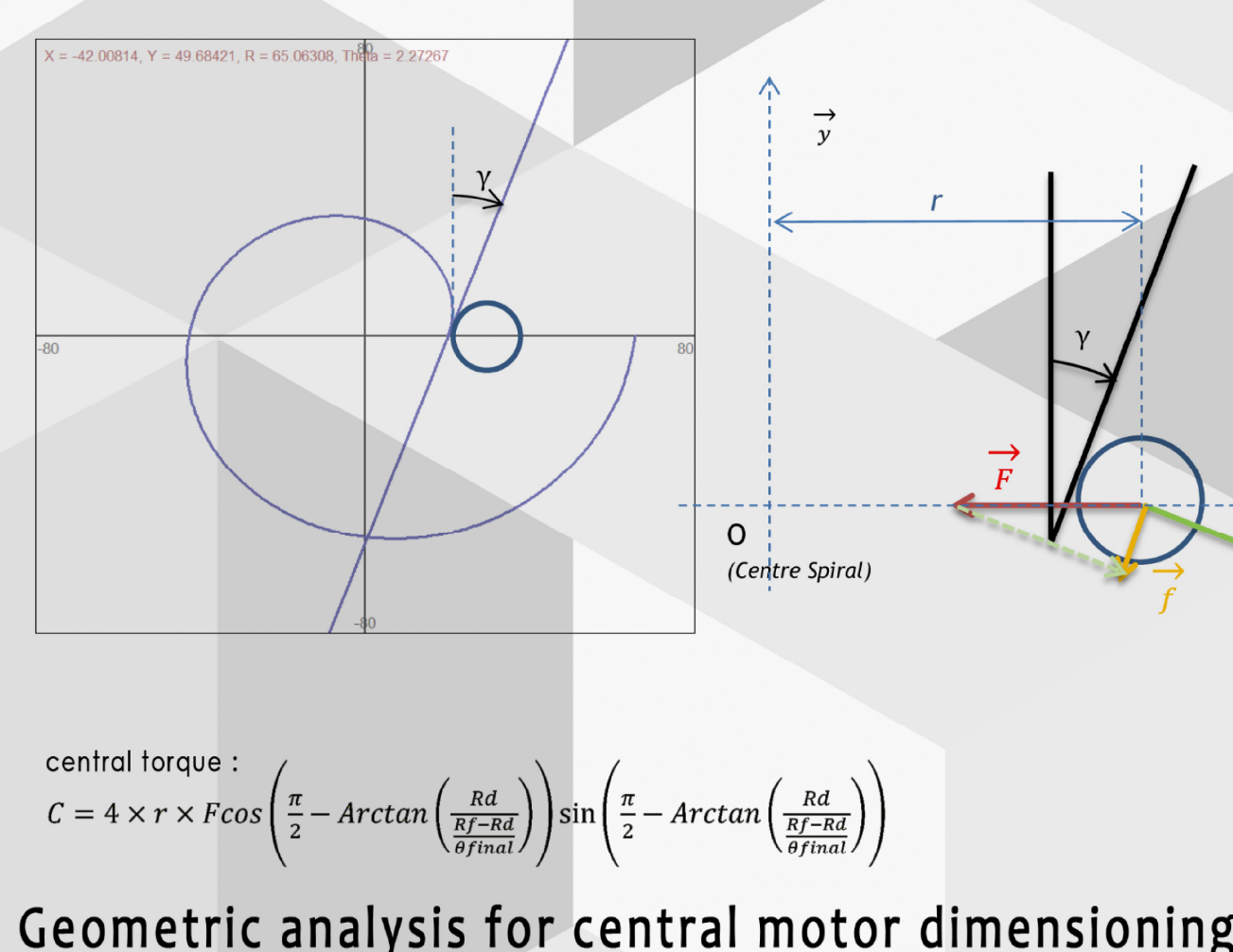
## SPECIFICATIONS:

The quadrupole fits in CF100 DN flange so it can be transferred to or removed from the sample through the CF100 vacuum chamber fittings.

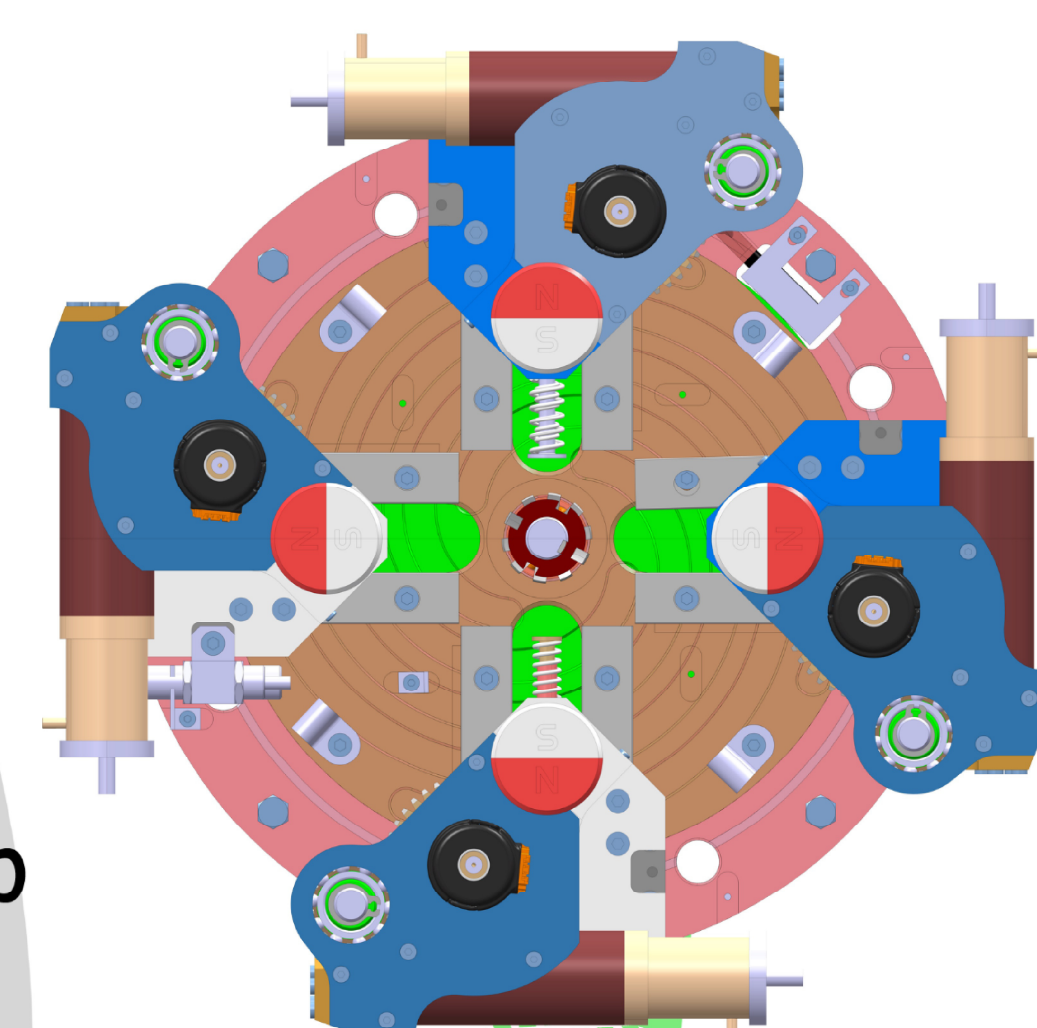
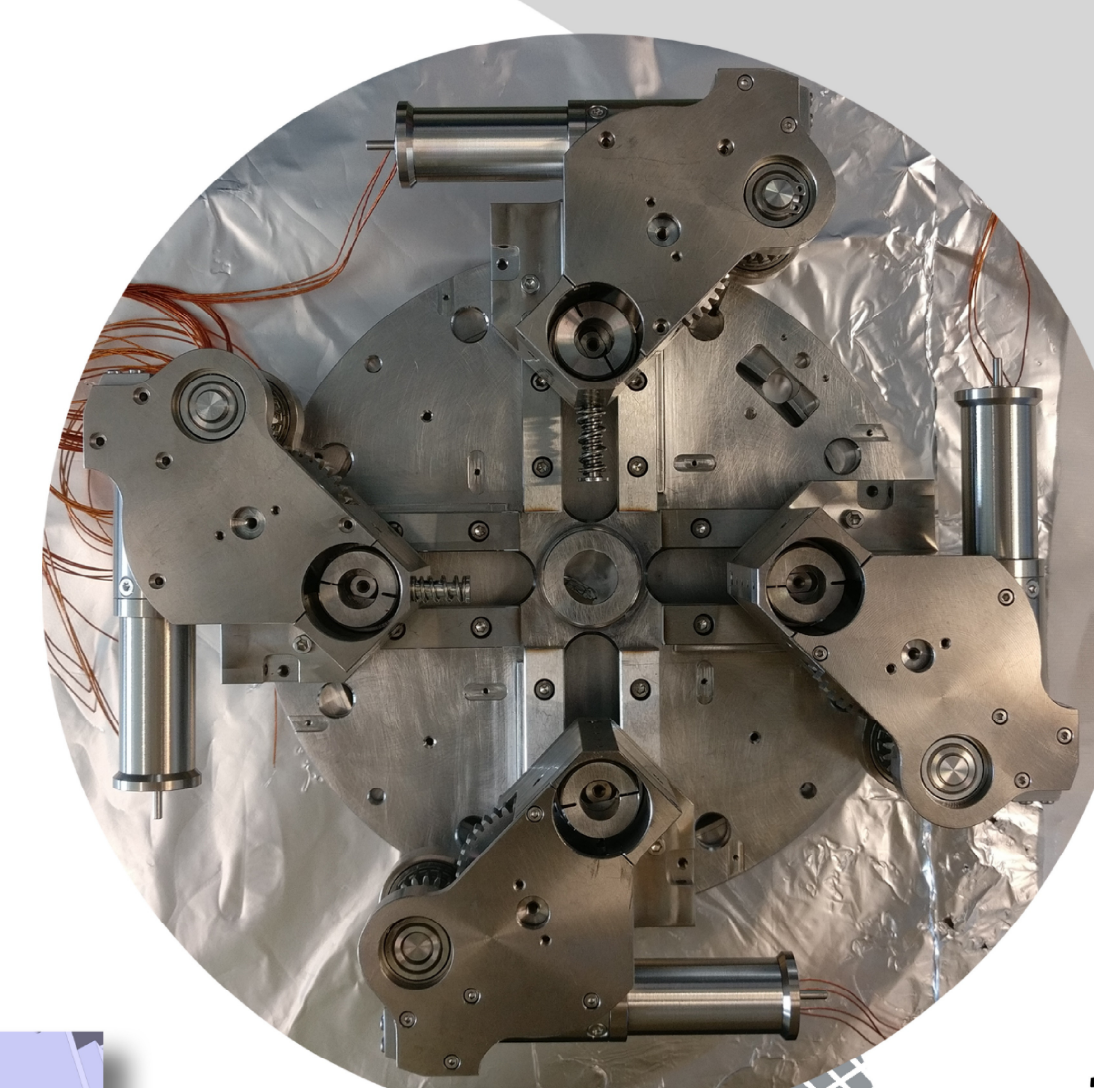
The horizontal magnetic field is driven by four motorized rotating magnets, with motorized gap.

The magnetic field reaches ~1T, at minimum gap on the center of the quadrupole.

All motorized movements are encoded.



## 3) Minimum gap



## 2) Middle course gap

