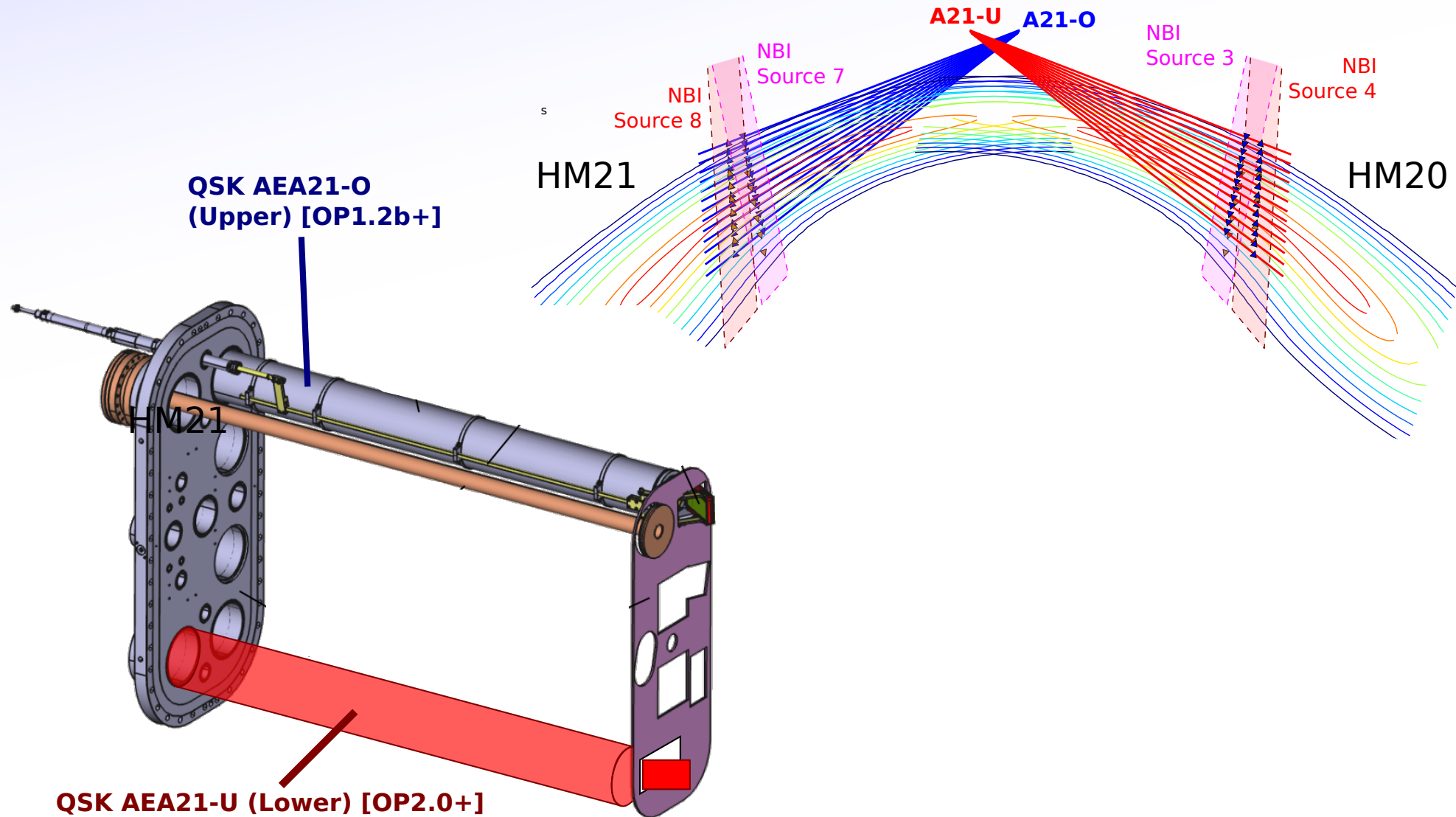




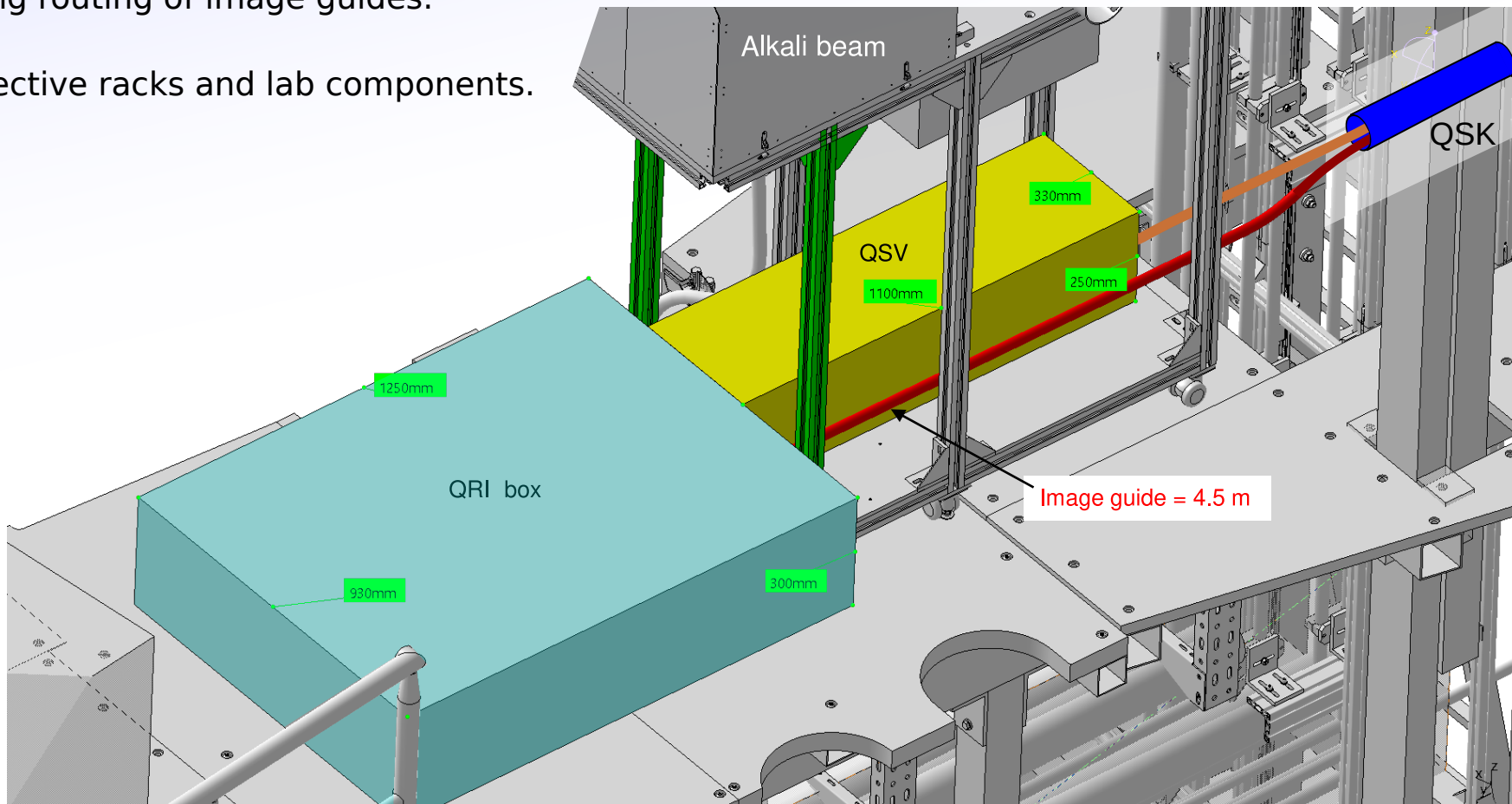
AEA21-U - Video, CIS, CXRS-CIS

- Copy of AEA21-O immersion tube and cooling components. (Stellarator symmetric)
- Toroidal view of HM20 for video (QSV), coherence-imaging (QRI) and CXRS-CIS (QSK/QRI)



AEA21-U - Video, CIS, CXRS-CIS

- Extension of *existing* projects (QSV, QSK, QRI).
- Projects separated by physical components:
 - 1) QSK: Immersion tube, optics carriage and optics.
 - 2) QSV/QRI: Image guides, soft-iron boxes and contained components.
 - Including routing of image guides.
 - 3) All: Respective racks and lab components.



"CXRS-CIS":
(No project)

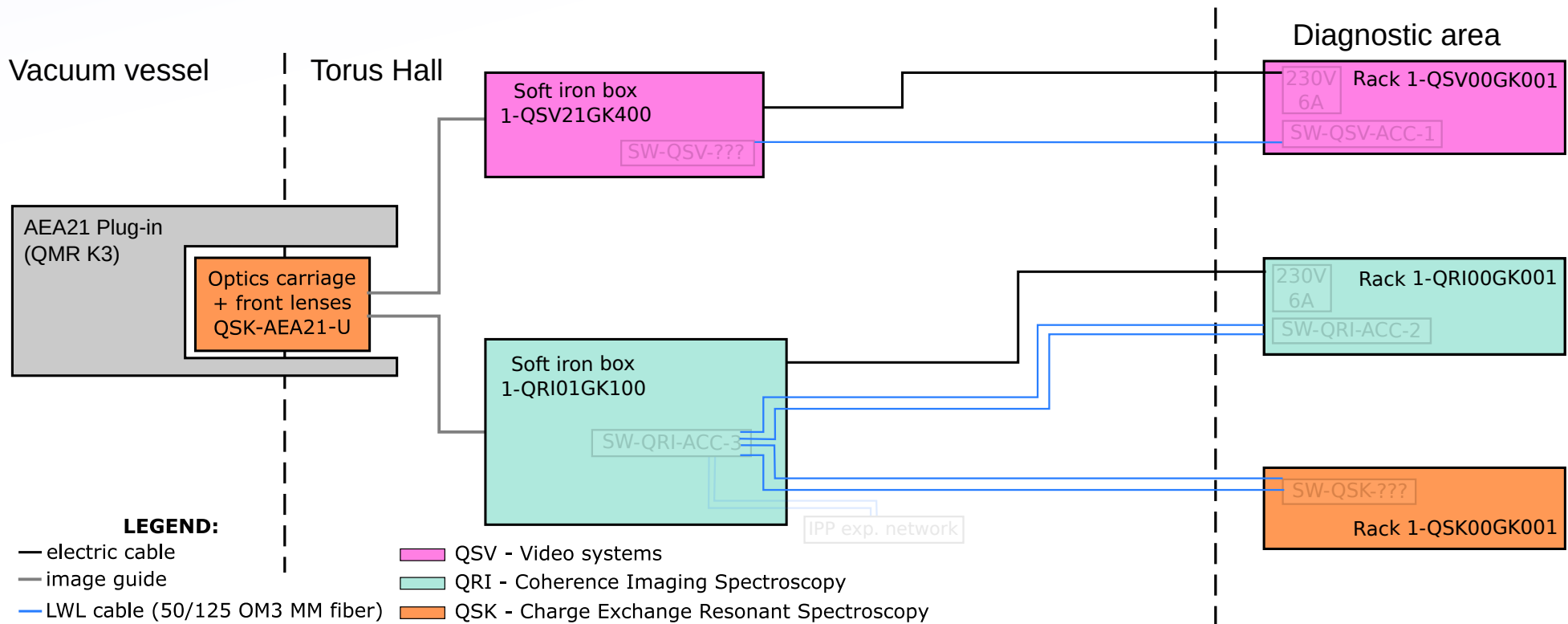
- Design and purchase of optical components by University of Seville in 2021/22.
- Approximate copy of QRI components installed inside QRI soft-iron box.
- Data acquisition in QSK racks (LWL connection).

AEA21-U - Video, CIS, CXRS-CIS

- Extension/change of *existing* projects (QSV, QSK, QRI).
- Separate projects by physical components:
 - 1) QSK: Immersion tube, optics carriage and optics.
 - 2) QSV/QRI: Image guides, soft-iron boxes and contained components.
 - Including routing of image guides.
 - 3) All: Respective racks and lab components.

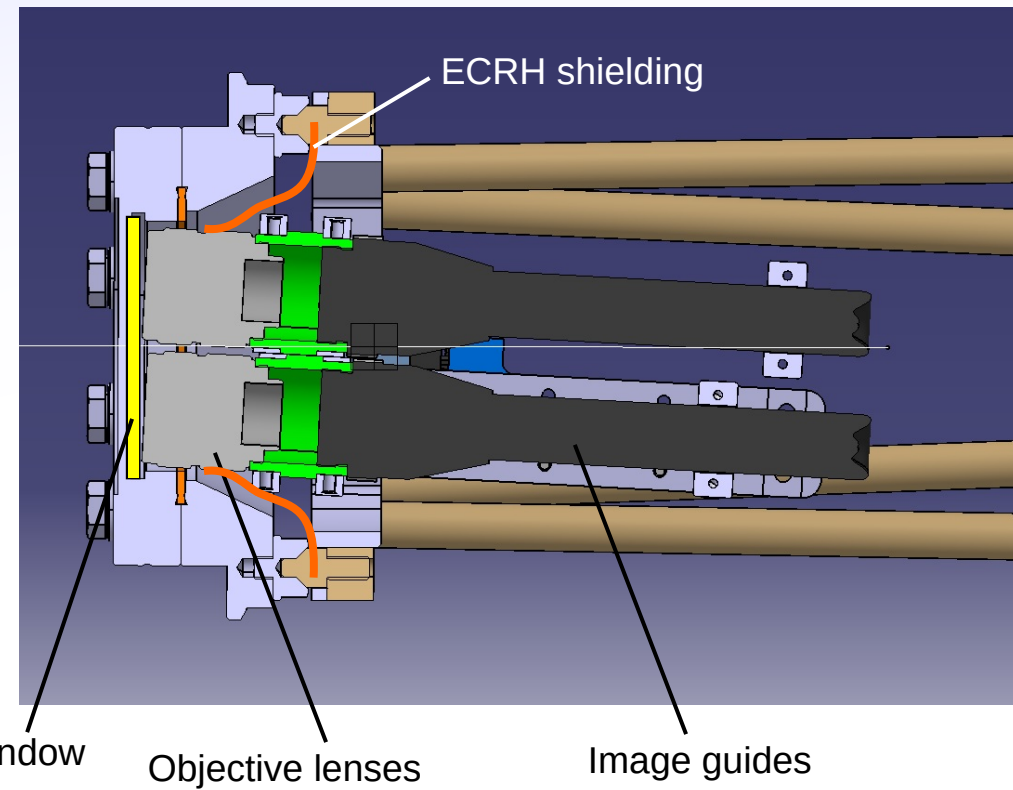
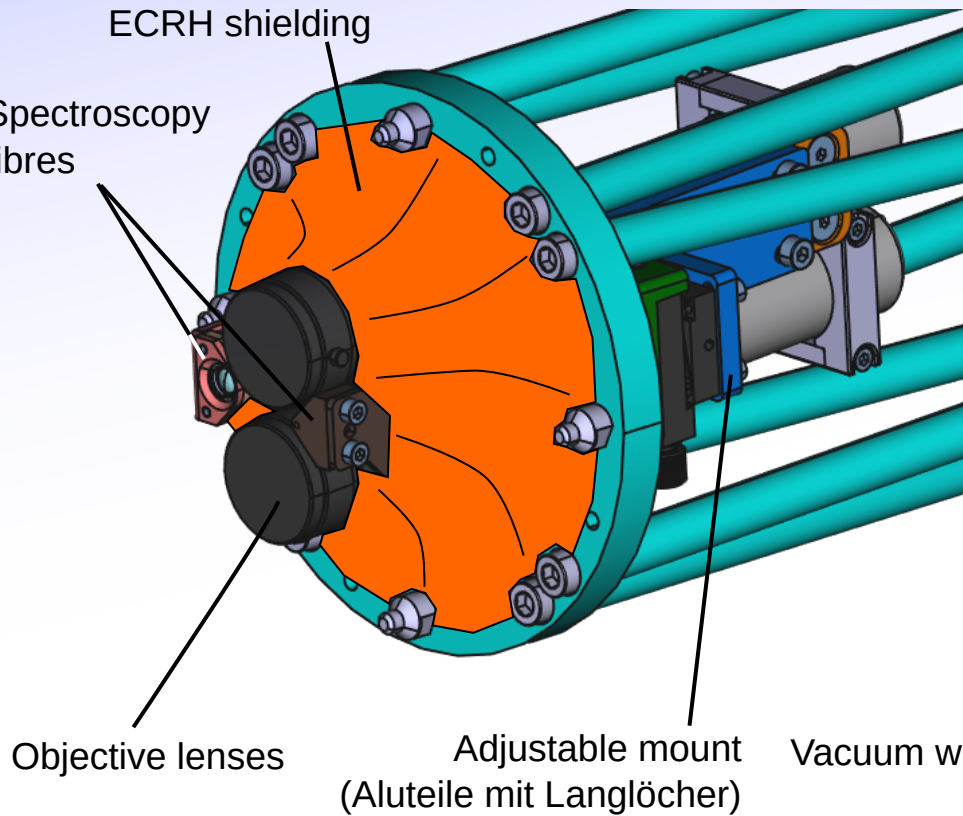
"CXRS-CIS":

- Design and purchase of optical components by University of Seville in 2021.
- Approximately copy of QRI components installed inside QRI soft-iron box.
- Data acquisition in QSK racks (LWL connection).



AEA21-U - Optics

- Optical design and manufacturing by QSV external (energia.mta.hu) --> Complete.



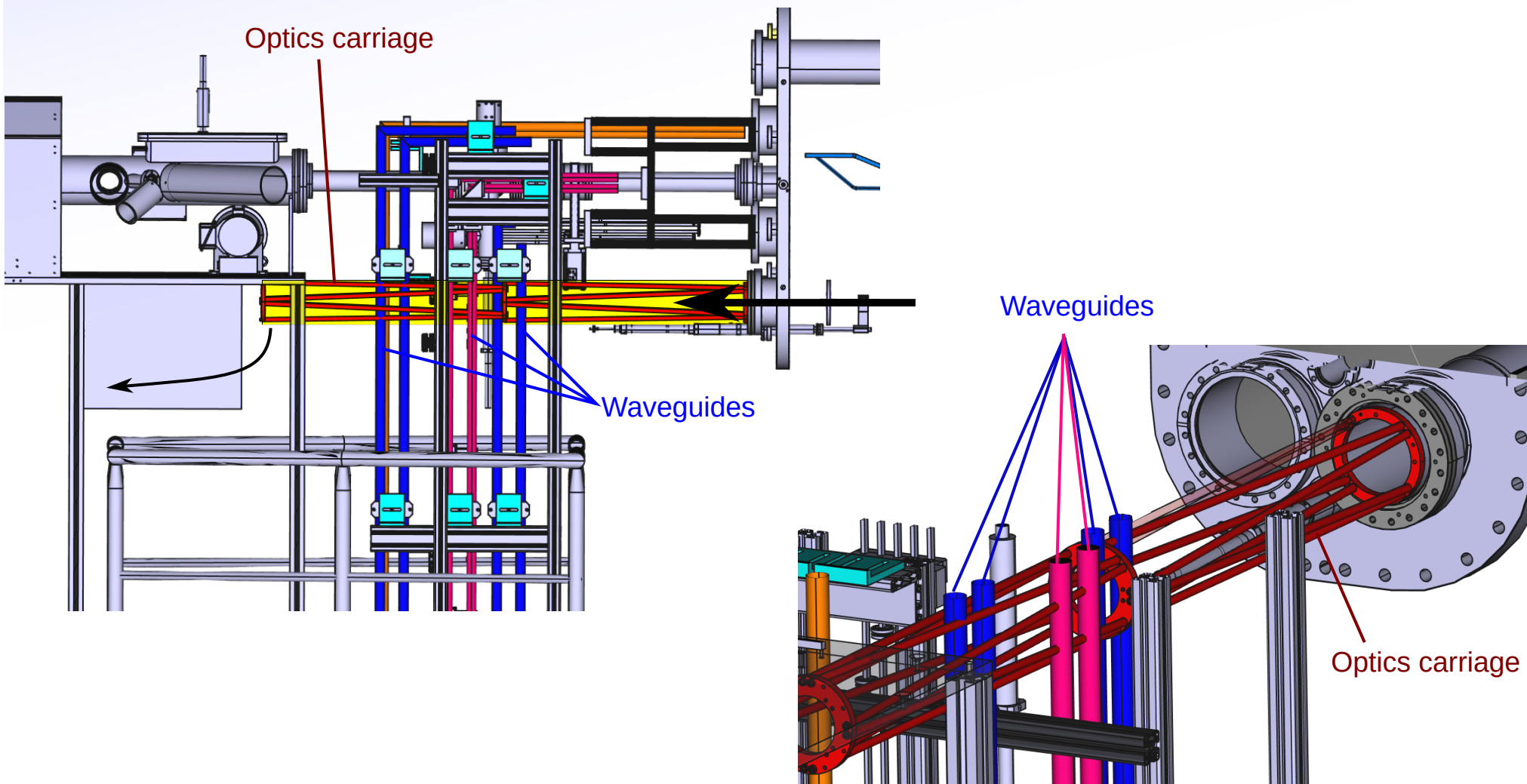
- Test installation of optics carriage in immersion tube required to set lenses close to, but not touching the vacuum window, align relative to A21 flange and do calibrations for QRI.
--> before or after A21 vacuum test in MISTRAL.

Materials: All W7-X stainless steel, aluminium or brass, except:

- Objective lenses - Need to confirm magnetic properties --> Sonderfreigabe.
- Fibre bundles --> Used in OP1.2 in AEQ21. Glass, aluminium and non-magnetic steel mesh.

AEA21-U - Video, CIS, CXRS-CIS

- Reflectometry waveguides (QMR?) have been installed behind QSK immersion tube.
- Installation of QSK optics carriage must take place **before** reinstallation of waveguides.
- For maintenance of optics, waveguide section will be temporarily removed.
(agreed with QMR RO)
- Box installation, securing of fibre bundle etc covered by QRI/QSV (see CN 1-QRI-C0007)



ECRH stray radiation - AEA21-U

Contents of tube:

- Stainless steel and aluminium mouting components.
- Objective lenses - Anodised aluminium + unknown glass --> **MISTRAL test**
- Image guide - covered in thin wire mesh --> **Cover in foil or metal tube.**

