Rome Cryolab updates

BULLKID MEETING 16.01.2025

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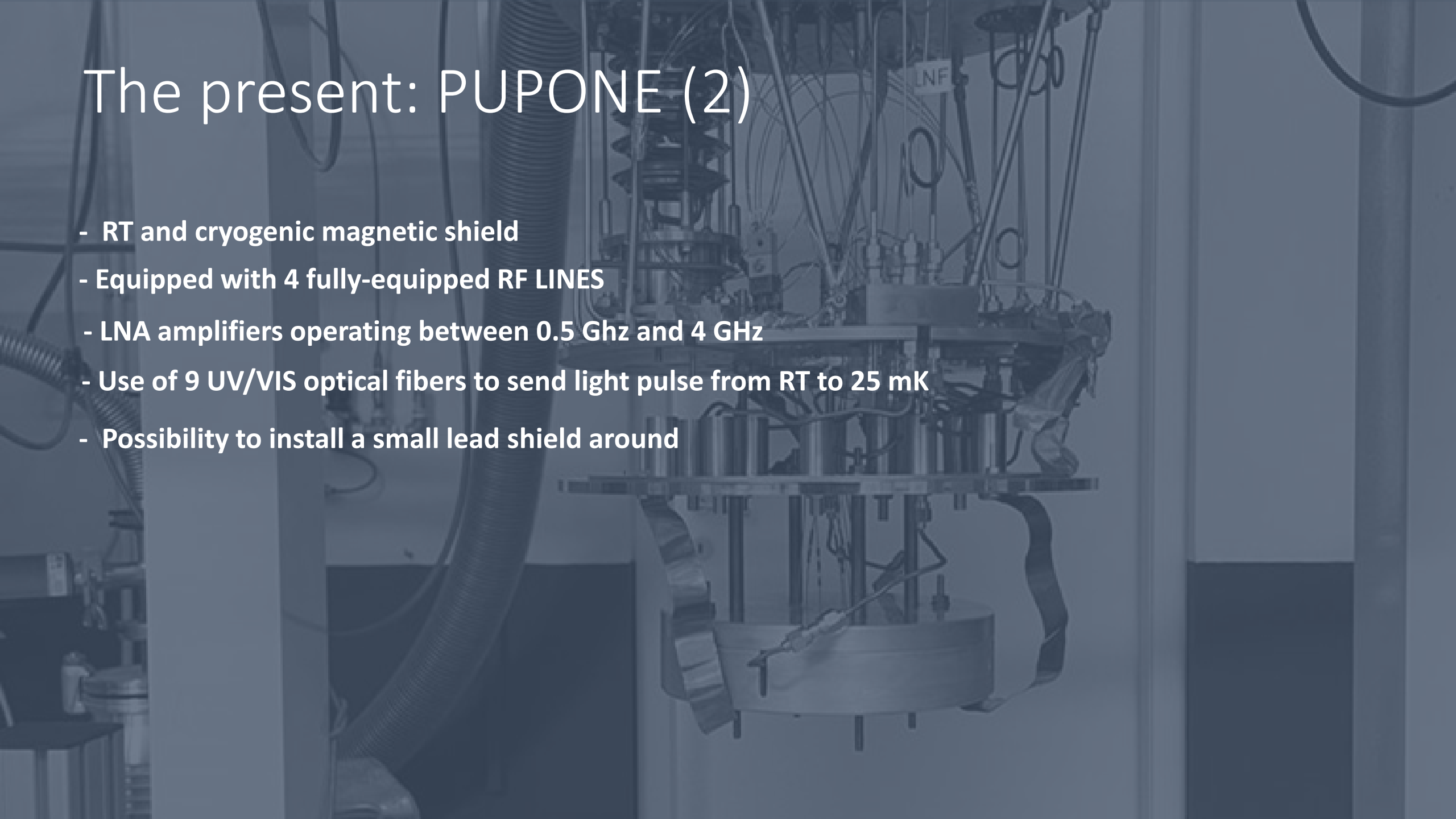
The lab

- - Total surface of about 100 m^2
- - 1 DR currently operating
- - 1 DR will arrive in 0.5 yr
- - 1° floor of a historical building (working to allow a higher load on the floor)

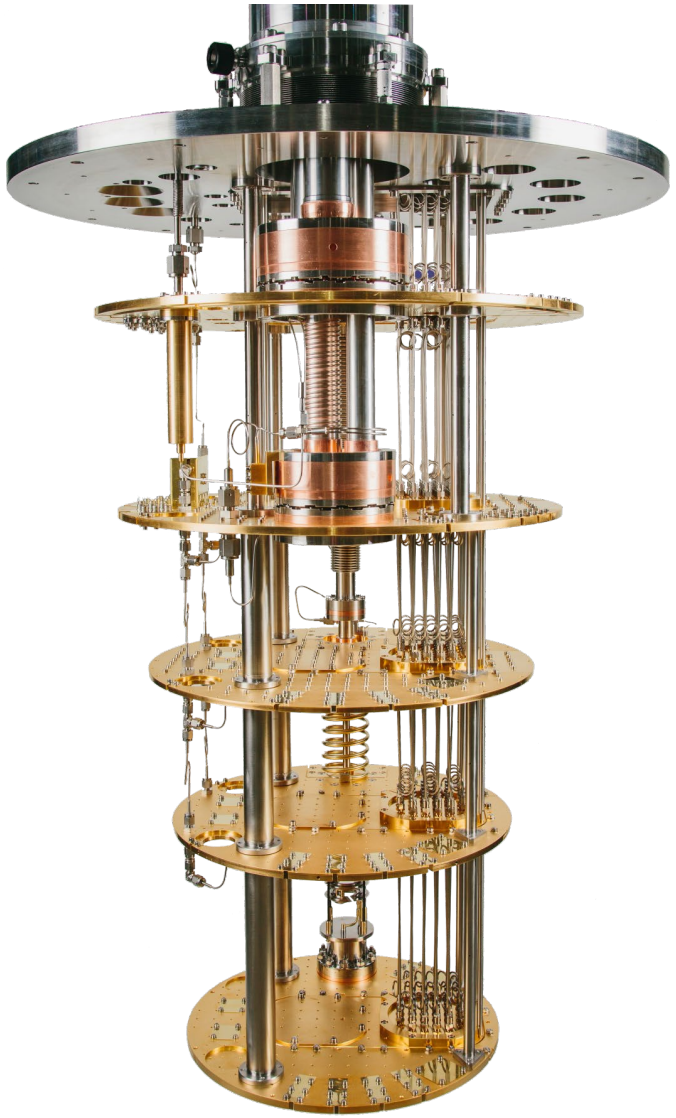
The present: PUPONE

- Oxinst Triton 200
- (Well) operating from 2016
- Base temperature 25 mK
- Antivibration stand
- Cryomech PT410 based
- Precooling through a dedicated circuits
- Limited weight load at low temperatures (< 8 kg)

The present: PUPONE (2)



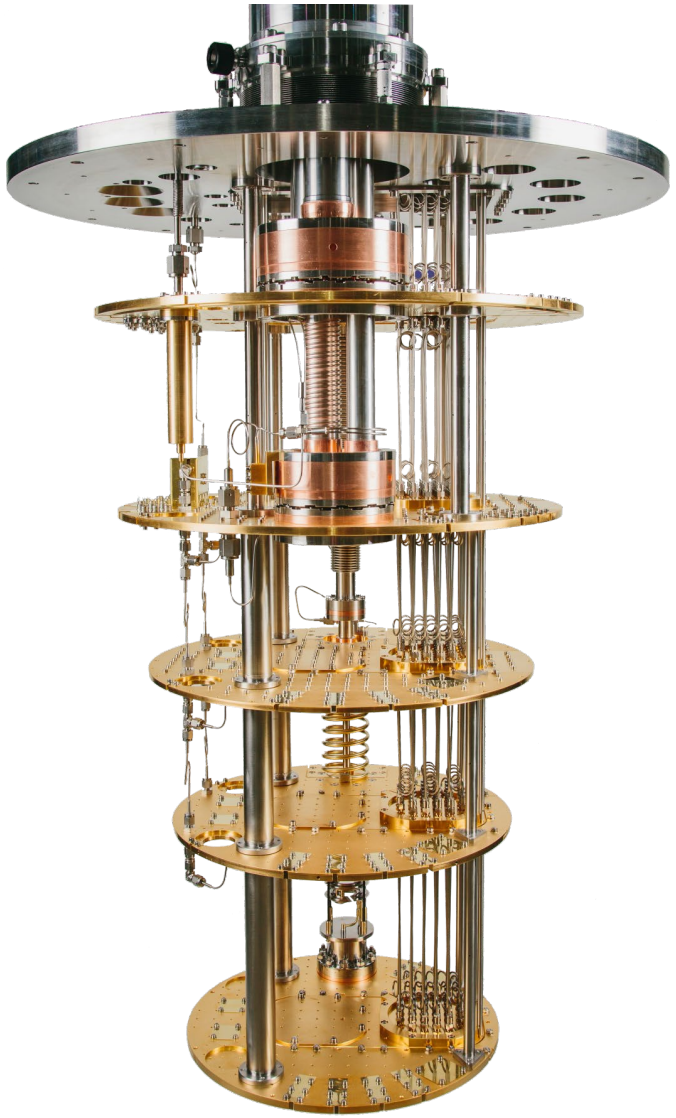
- RT and cryogenic magnetic shield
- Equipped with 4 fully-equipped RF LINES
- LNA amplifiers operating between 0.5 Ghz and 4 GHz
- Use of 9 UV/VIS optical fibers to send light pulse from RT to 25 mK
- Possibility to install a small lead shield around



BRIO: the new cryostat

MODEL	Triton 200	Proteox MX 450
Exp. room	d: 24 cm h: 20 cm	d: 36 cm h: 65 cm
Pulse tube	PT410	PT420
Optical fibers	9 → 64	128
RF lines	4	16
Load limit @ MC	8 kg	250 kg
Time of cooldown	1-2 days	1 day -> 2 weeks (?)

It will allow to build and to commission the payload @ Sapienza



BRIO: the new cryostat

- Tender closed on Dec 2024 -> OXINST (delay 0.5-1 yr)
- Cryostat expected in July/Sep 2025
- Renovation of the lab during the next months

- 650 mm vertical sample space below mixing chamber plate

PLT30361.5

Upgrade ProteoxMX450 system to accommodate 250Kg load

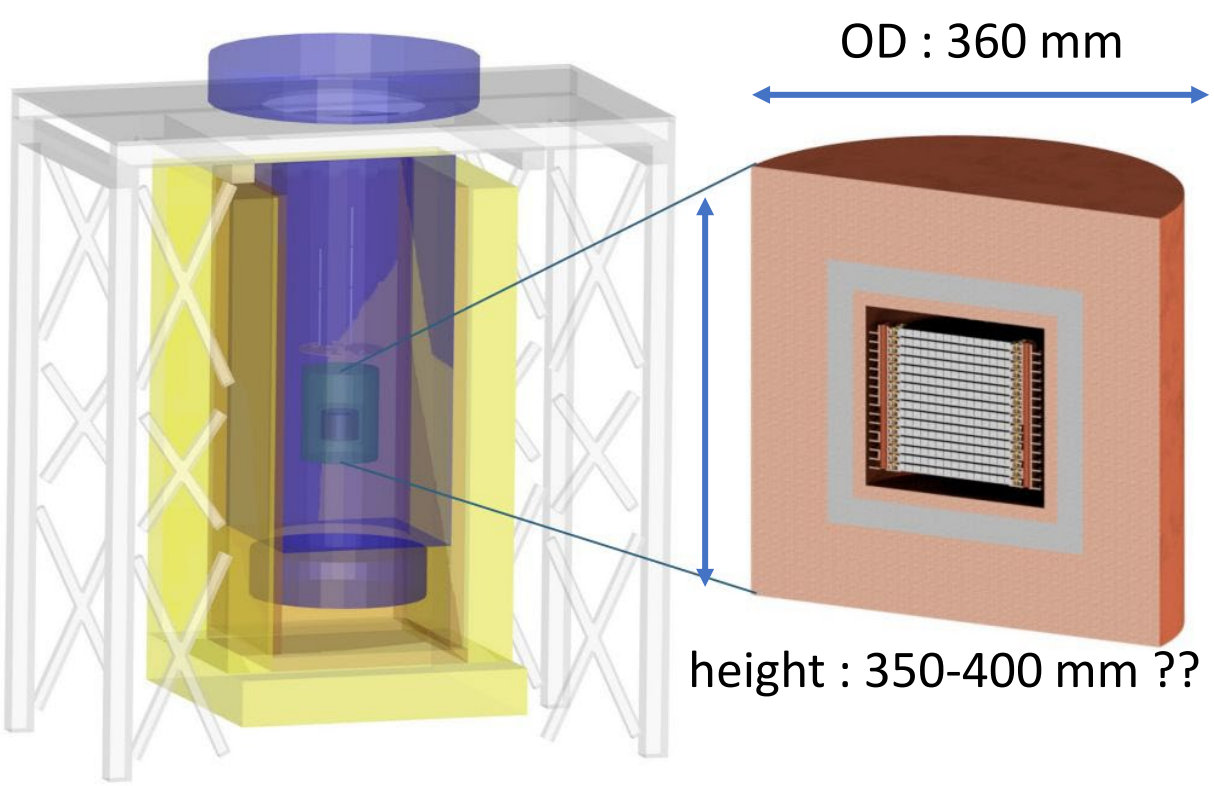
This is a budgetary quotation for indicative purposes only

The ProteoxMX system will be supplied with 4 off additional mounting points positioned under the existing mixing chamber plate support components. These points will be suitable for mounting a load up to 250Kg approximately equally distributed between the points. These are expected to be a female thread in each position, M6 or greater but will be confirmed in the design stage.

Technical assumptions / exclusions

1) This cannot be ordered as a standalone items and can only be ordered together with a ProteoxMX450 system
2) The extended mixing chamber shield can be selected from the WPL
3) The thermal interface between the MC plate and the cold mass will be the customer's responsibility.
4) This option may not be compatible with the active damping option on PLT30361.2

Cryo Cu-shield

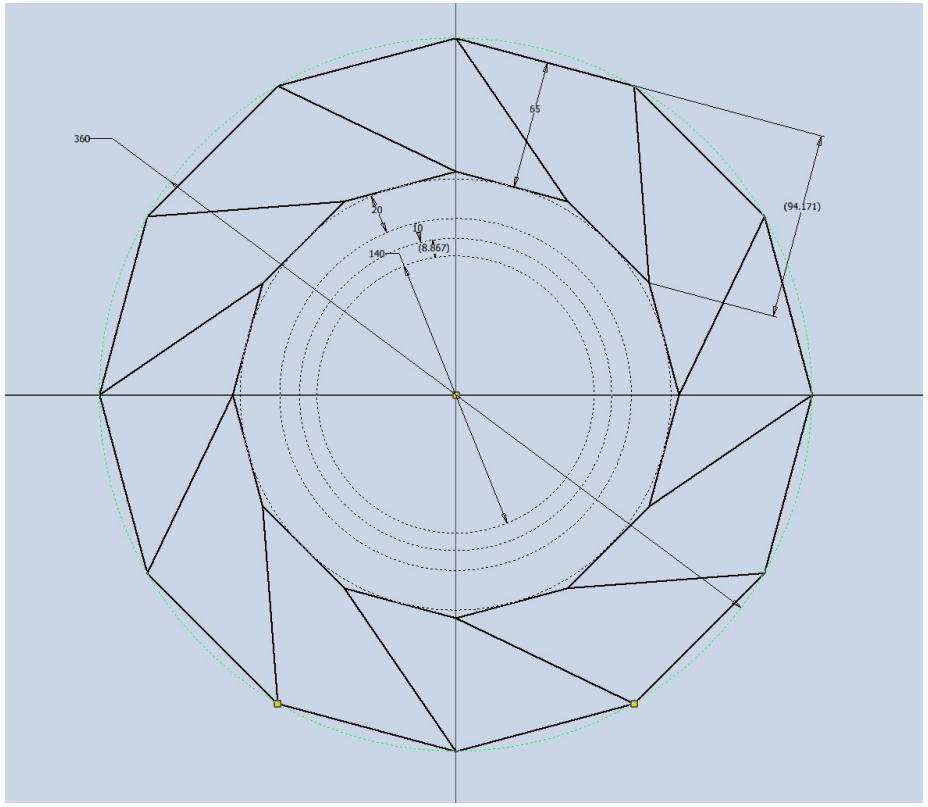


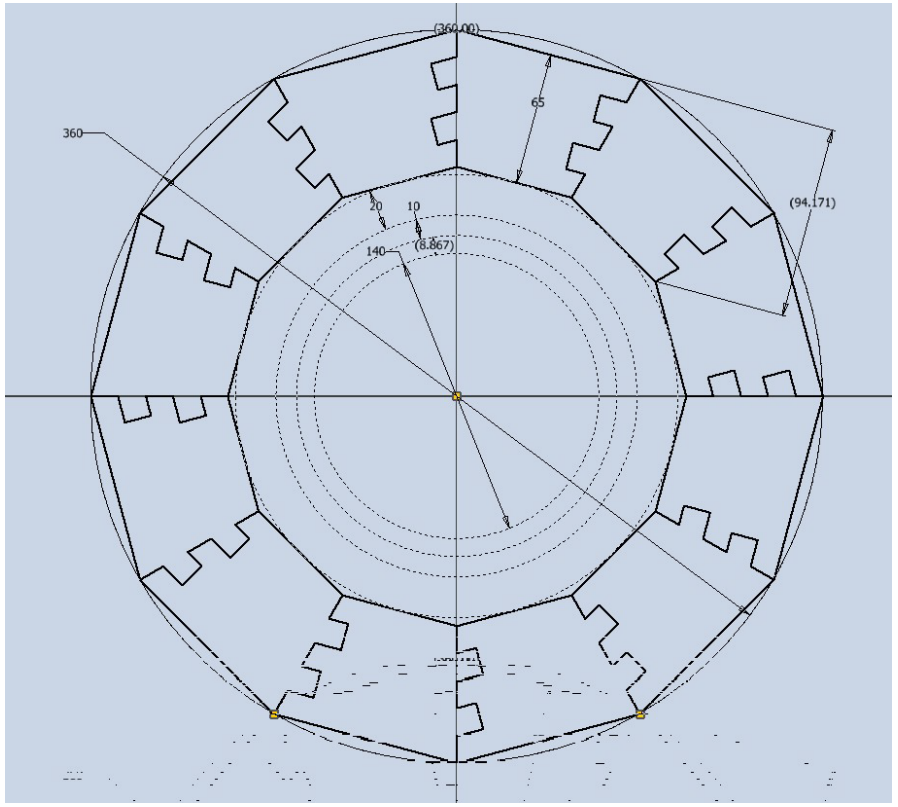
- Supported by CSN2 in 2025 (25 k€) for the demonstrator and the final experiment
- Assessment of radiopurity of the material:

1. found 2 suppliers of CW008A (LUVATA and METAL MINOTTI)
2. Testa of radiopurity @LNGS during the next months

- Available format of the material: 70mm-thick plate
- Need to define a design: easy to thermalize and with no free LOS

Cryo Cu-shield (2)





Such designs should be doable at LNL witout the need of external orders