



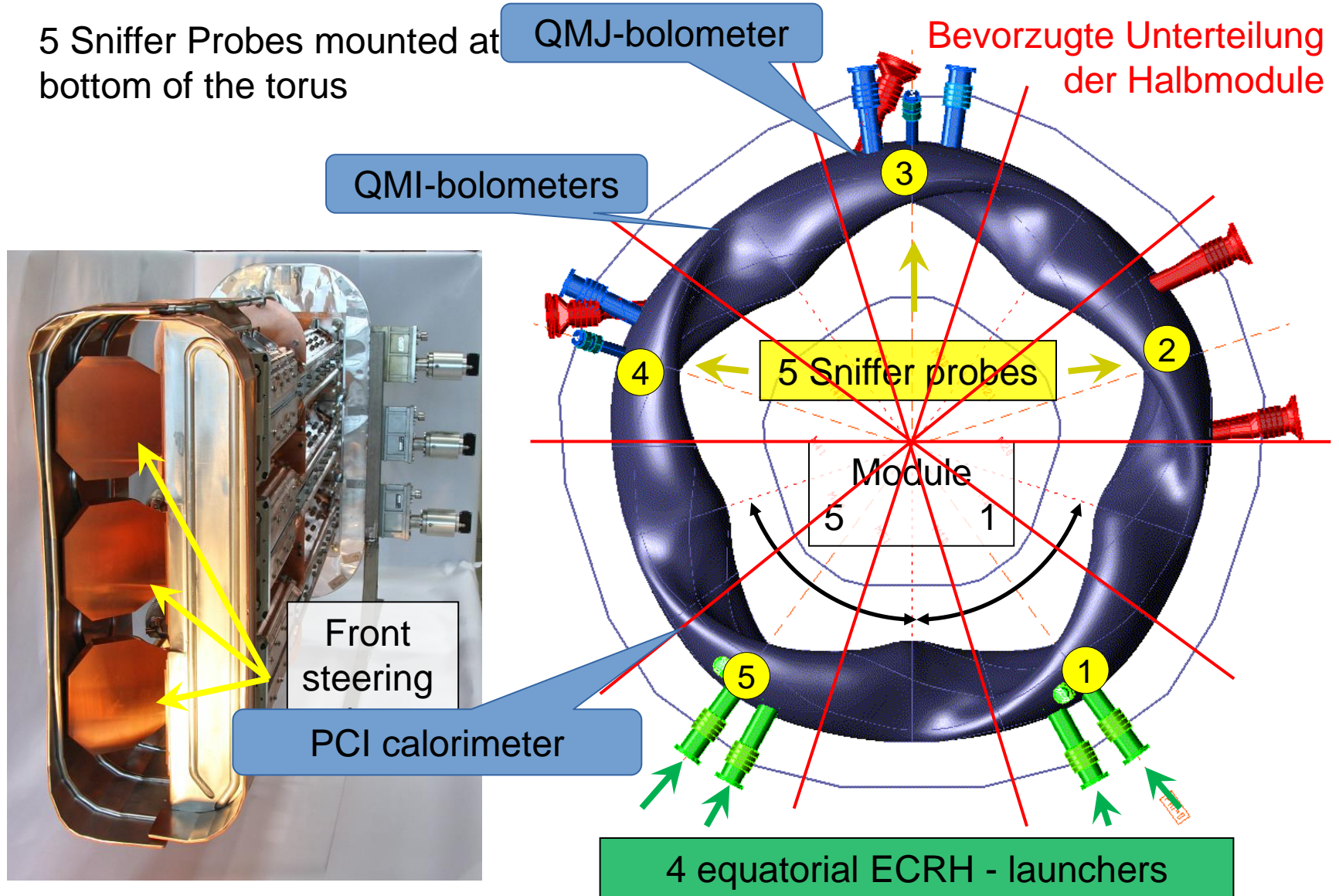
J. Brunner  
Stray radiation proposals

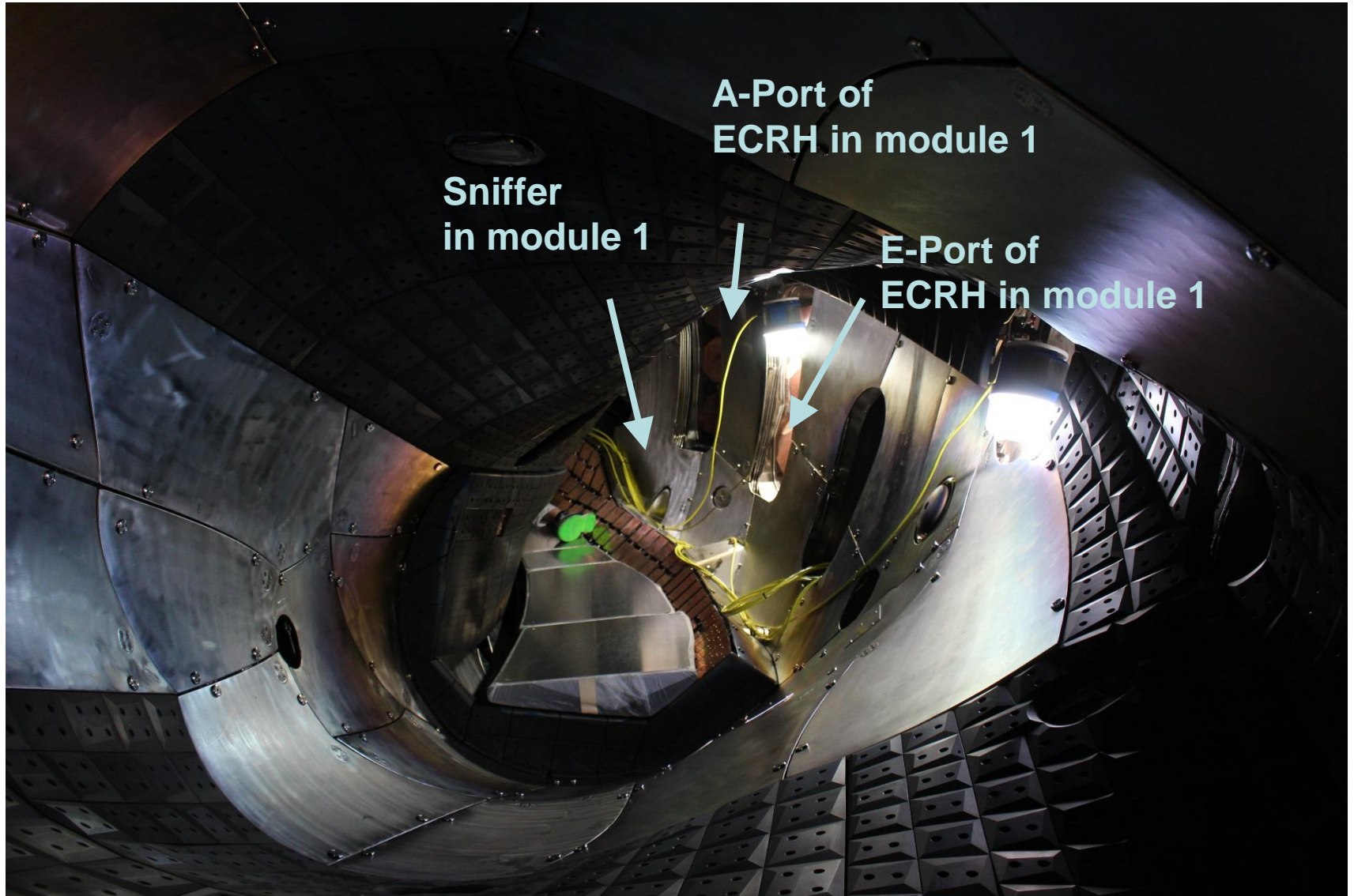
TG “Heating” Meeting,  
01 March 2022

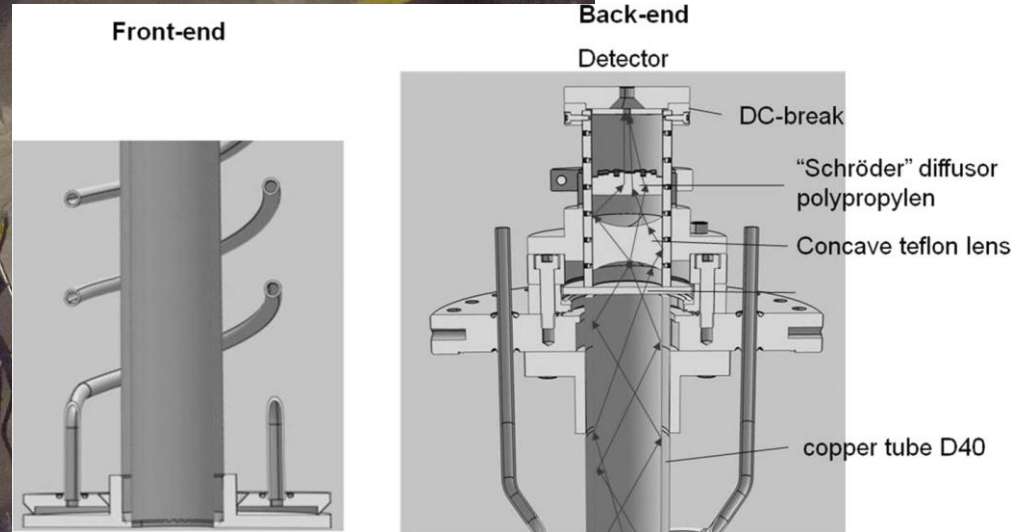
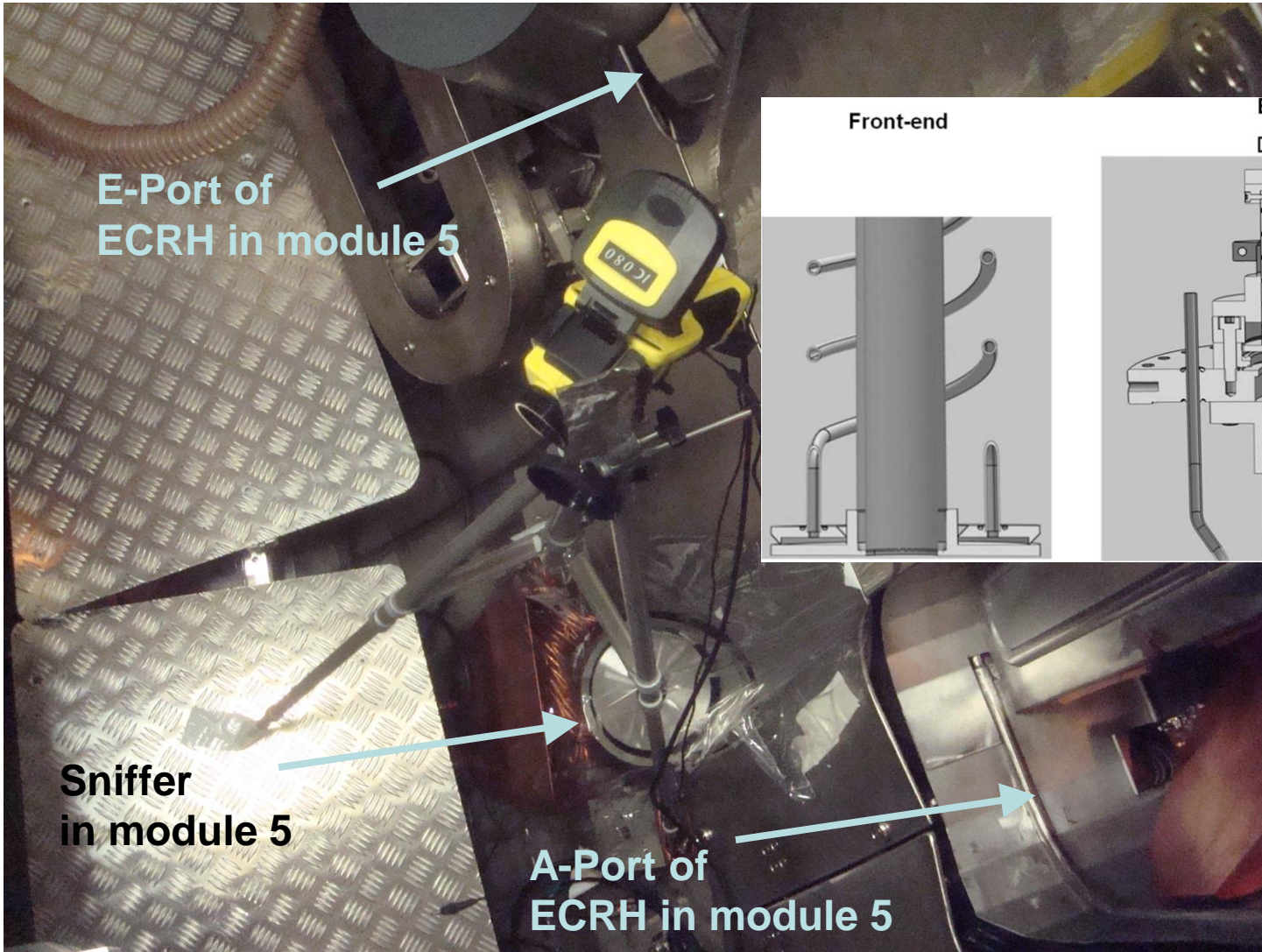


# Setup - Location of launchers & sniffers in the torus

- 5 Sniffer Probes mounted at bottom of the torus



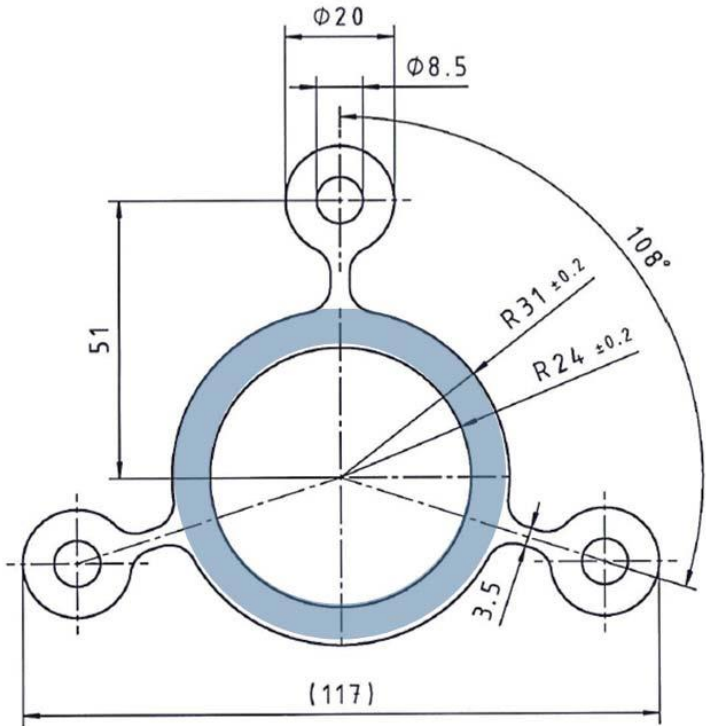




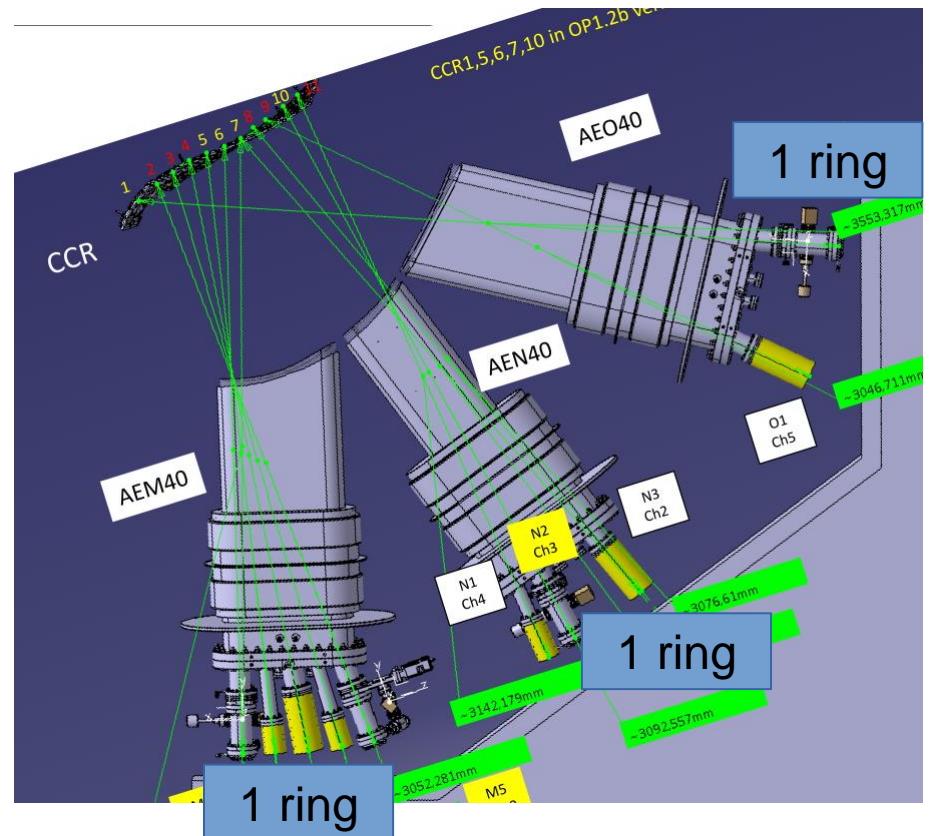


# ITER RF window bolometer

RF Bolometers are a test setup originally designed for ITER  
[ see PLM : 1-QMT4-T0057 ]



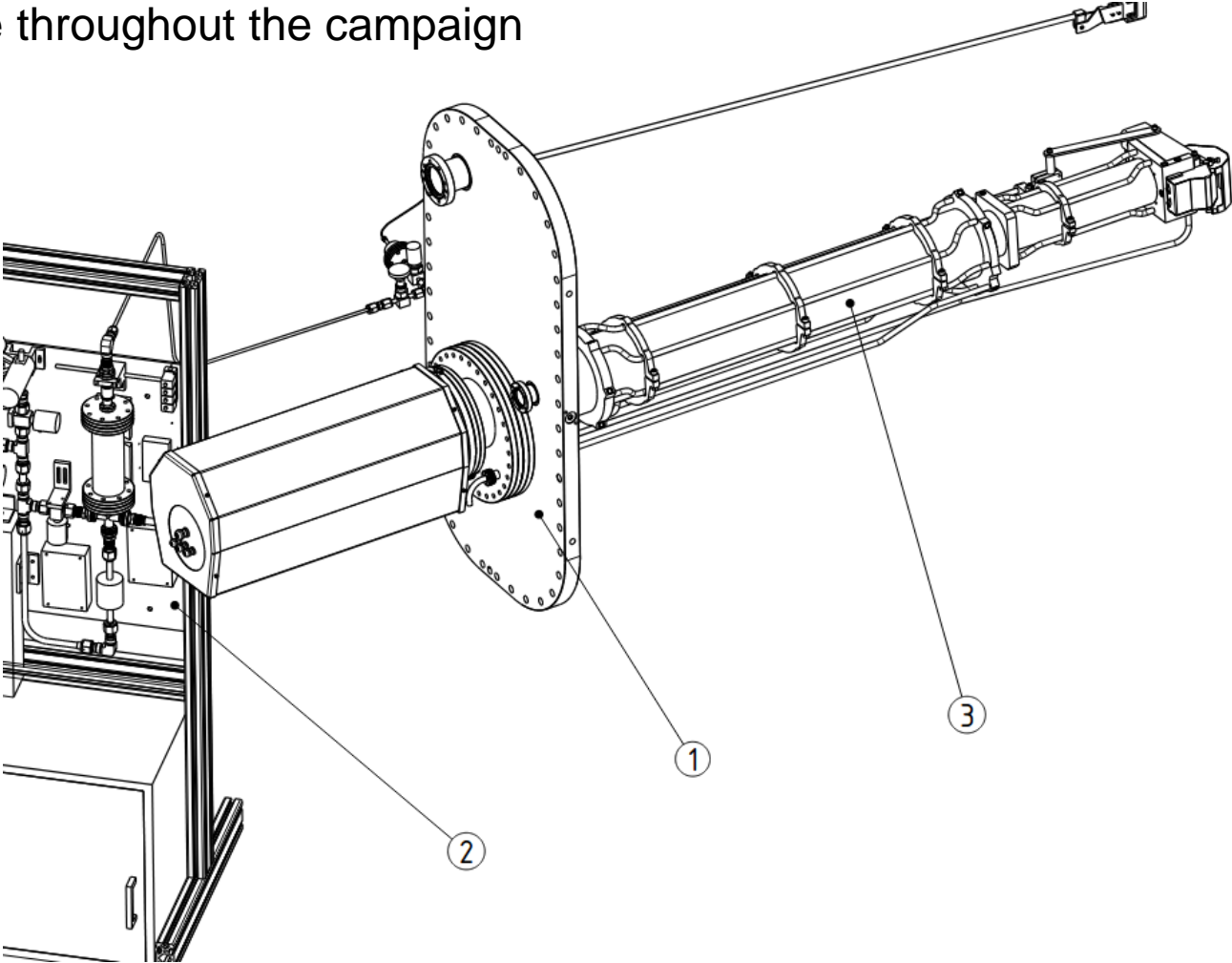
- \*Coating thickness:  
1 Ring x 150  $\mu\text{m}$  Al 2 O 3 /TiO 2 87/13  
1 Ring x 300  $\mu\text{m}$  Al 2 O 3 /TiO 2 87/13





Calorimetry is probably the most accurate measurement of stray radiation esp. Close to the sources

Will not be available throughout the campaign





# Commissioning proposals



Research question(s)	Proponent	type of experiments	experimental conditions required
Sniffer calibration	D. Moseev J. Brunner	dedicated commissioning experiment	empty torus and ECRH blips, All sniffers in module 3 for relative calibration, then move sniffers to their respective position and check for consistency with RF bolometers
RF bolometer commissioning	H. Oosterbeek J. Brunner	piggyback commissioning experiment	requires a plasma and significant levels of RF stray radiation, otherwise no special requirements
stray radiation model calibration/commissioning	H. Oosterbeek J. Brunner	piggyback commissioning experiment	requires sniffer and RF bolometer commissioning and then several plasma and sniffer testshots to calibrate transfer and absorption coefficients. Nothing else required



# Scientific phase proposals



Research question(s)	Proponent	type of experiments	experimental conditions required
ECRH stray radiation levels over core parameters (density/temperature)	J. Brunner	piggyback experiment over campaign	Investigate operational limits from other experiments. Look at stray radiation over the whole campaign
comparison of stray radiation levels with TRAVIS direct absorption calculations	J. Brunner T. Stange	piggyback experiment over campaign	Consistency check. This may not require a direct proposal
<b>Operational interest</b>			
What are the operational limits of the ECRH system w.r.t. stray radiation	J. Brunner (T. Stange S. Marsen)	dedicated experiments	Fill the gaps in the piggyback proposal Density ramp (pellets and gas) at various power levels (base ECRH)
How does stray radiation behave during a pellet injection, i.e. is there significant effect on absorption (short timescale)	J. Brunner	piggyback experiment over campaign	Any pellet discharge at high densities. Probably X2 would show refraction effects, O2 cooling effects
How does break down work in W7-X	D. Moseev + student	piggyback experiment over campaign	using fast sniffers the stray radiation is the only diagnostic able to diagnose the break down.
refraction tracking using ECA diagnostic	???? (J.Brunner)	piggyback experiment over campaign	The diagnostic needs to be further evaluated to its effectiveness to track refraction. O2 density ramps are ideal