



Construction of prototype XGM finished

Milestone M7.2
for EUCALL workpackage 7
Pulse Characterisation and Control (PUCCA)

Stephan Klumpp and Kai Tiedtke
FS-FLASH-D (DESY)
on behalf of PUCCA

July 6, 2017



To compensate the expected low count rate of charged particles created by photoionisation of noble gases at either high photon energies in the keV regime and hence low cross sections as at the European XFEL or at low photon densities in the order of 1×10^4 photons/s to 1×10^6 photons/s as expected at ELI (Beamlines), we proposed the design of a "Huge Aperture Multiplier" (HAMP) concept in our delivery D7.1 (Ultimate XGM sensitivities at FEL and ELI sources). The figure shows a first prototype based on the successful XBPM design of the FLASH photon diagnostic group (DESY FS-FLASH-D) for the determination of the photon beam intensity and the position on absolute scale introducing a commercial multiplier to the system. Goal of the set-up is to demonstrate its sensitivity on absolute scale at low particle count rates.

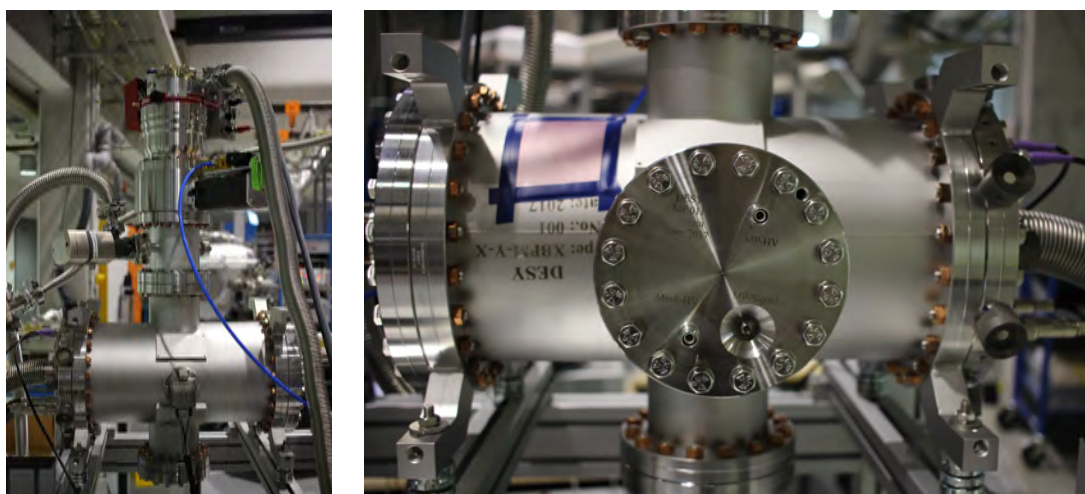


Figure 1: Set-up of the EUCALL XBPM including a commercial multiplier (mounted from the lower flange) at the Metrology Light Source (MLS) of the Physikalisch Technische Bundesanstalt (PTB), Berlin. The known x-ray radiation of the MLS is used to calibrate the detector response of the set-up to be able to determine the pulse intensity of the detected x-rays on absolute scale.