

EUV brightness measurements and IF imaging

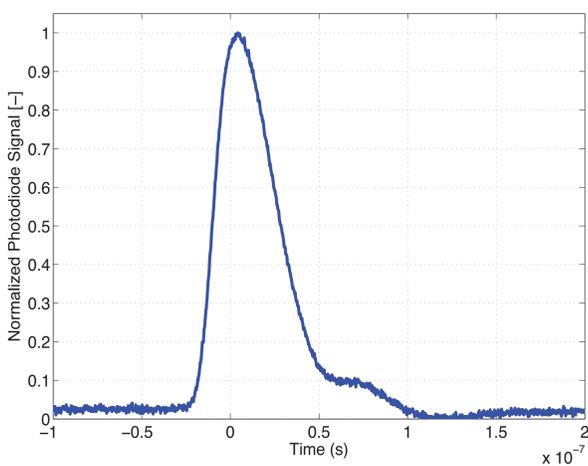
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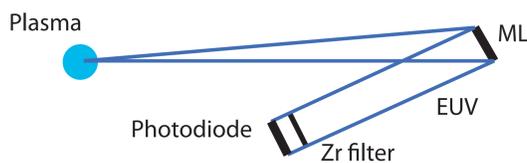
A system has been designed and manufactured at the ETH Zurich that images the EUV spot after IF and couples a debris mitigation to protect the ML mirrors used. Together with the EUV powermeter it gives the power at IF and at the source. The goal is to measure the brightness and the power of EUV in the system.

Flying circus

EUV emission is measured in time with a EUV powermeter that detect EUV at 2%BW.

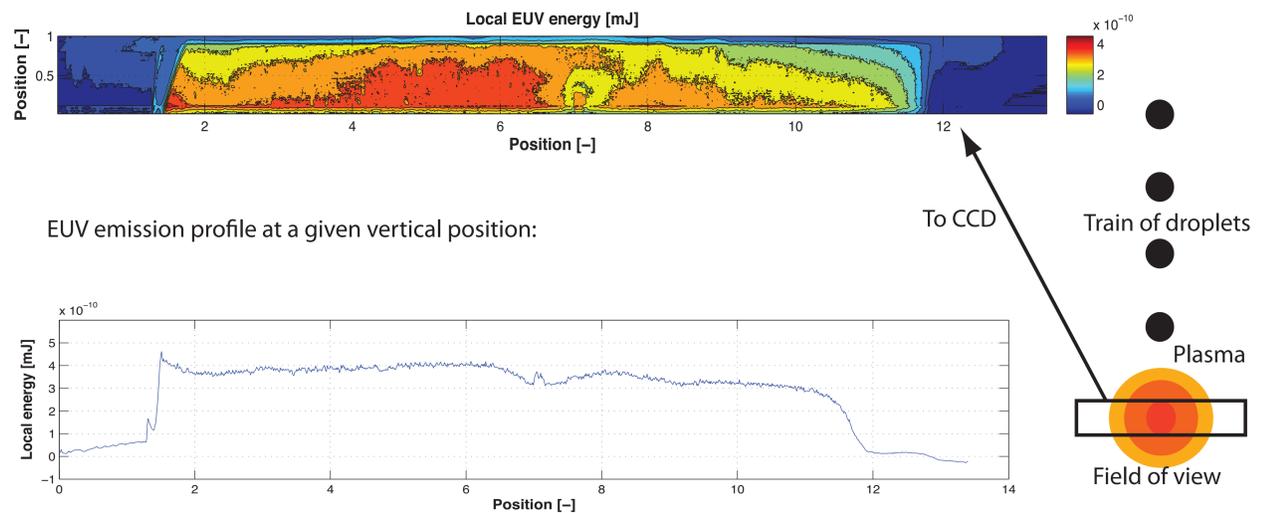


The integrated EUV energy over 2π sr at $\pm 1\%$ BW was measured.
The maximum EUV energy recorded was $1.05\text{mJ}/2\pi\text{sr}$ at $\pm 1\%$ BW, which gives a CE of 0.63%.
The FWHM is 42ns.

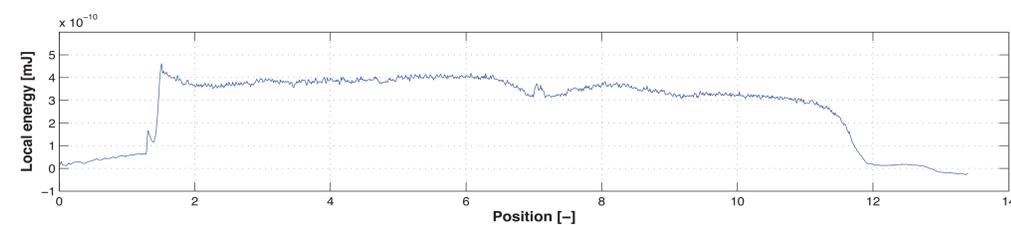


EUV brightness and IF spot imaging

The EUV emission is imaged after the IF that RGA measurements showed to be uncontaminated. The EUV beam is bounced on two mirrors before the IF and go through a Zr filter before the CCD, which constrains the bandwidth to $\pm 1\%$.



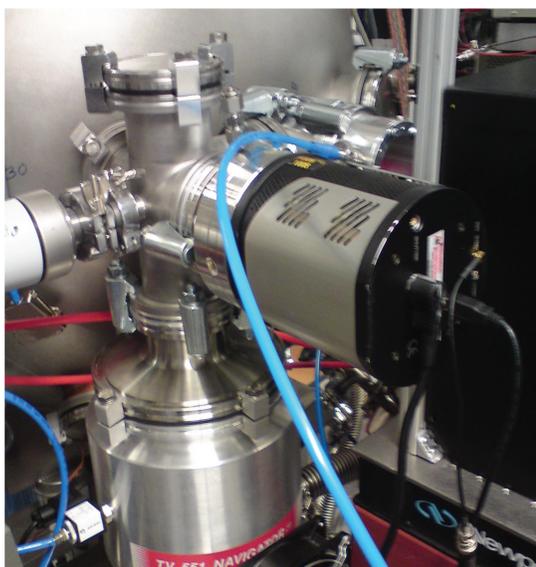
EUV emission profile at a given vertical position:



Measured EUV power at the source from EUV powermeter:	Conversion efficiency:	Calculated brightness*:
13.02W/2πsr at ±1%BW	1.18%	207.22 W/sr·mm ² at ±1%BW

*: 100μm source size through unaberrated mirrors

Experimental setup



- ▶ Concomitant measurement of EUV spot at IF, and EUV emission at the source.
- ▶ Both the instrument and the imaging tool are visualizing the plasma at the same angle from the laser axis.
- ▶ The MLs are protected by a debris mitigation system.

