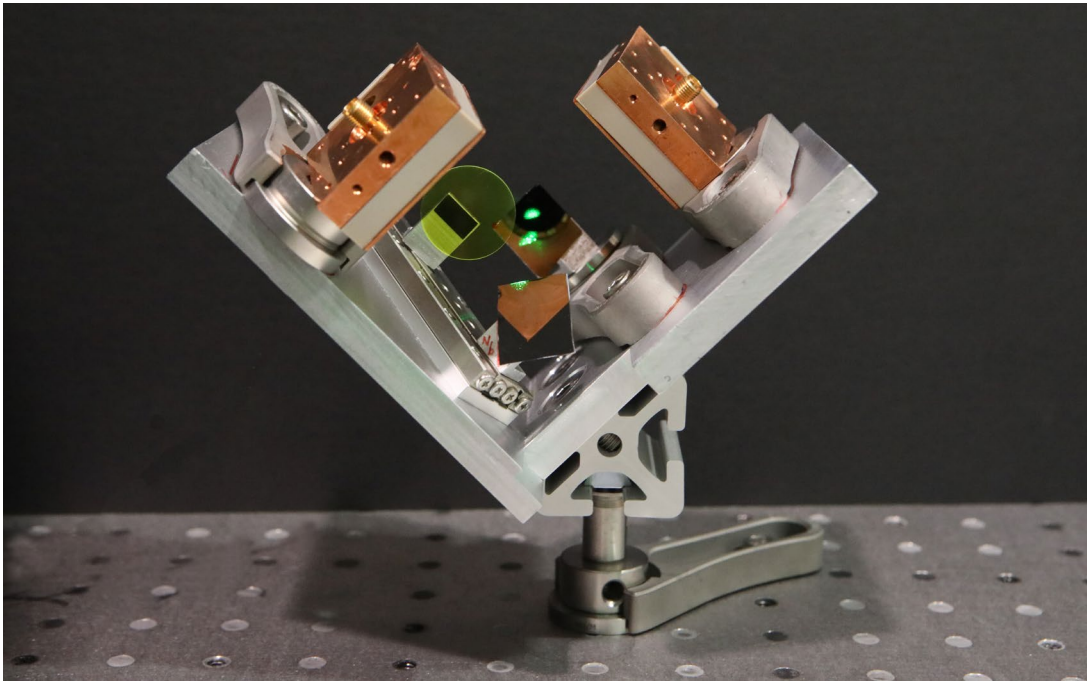


TONIX

EUV x-ray single-shot polarimeter for linear polarisation measurements



Highlights

Feature	Benefit
High sensitivity	The polarisation angle can be determined with a single pulse of 10^7 photons
HVS connectors	Compatible with commercially available systems
SMA signal connectors	Very high dynamic range.
Variable MCP amplification	Compatible with commercially available systems
Fast MCP response	Broad repetition working range (0 to 1MHz)
Simple mirror mount	Mirrors can be optimised for different EUV ranges

Applications

- Free-electron lasers (FELs)
- High-harmonic-generation (HHG) sources
- EUV sources where control of the linear polarisation angle is important

How Does It Work?

The TONIX is an energy-tunable polarimeter designed specifically for ultrashort linearly polarised extreme ultraviolet (EUV) pulsed sources and pump-probe experiments. Its high detection efficiency allows for the single-shot determination of the x-ray polarisation angle, both for diagnostics purposes and for spectroscopic investigations.

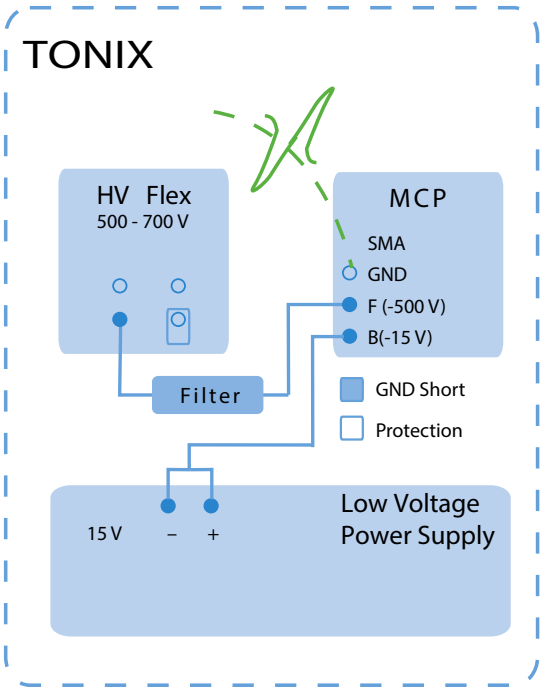
The TONIX, directly inserted into the beam or just collecting a portion of the beam, provides online measurement of the linear polarisation angle of the beam. The linear polarisation angle can change due to several physical phenomena: magnetic order, high density plasma matter, impurity domains, and strain. The TONIX can see the relevant contrast where intensity detection devices see little to nothing. The lack of polarimeters in the EUV range is essentially due to the fact that matter strongly absorbs in the EUV energy regime, and thus polarisers are hard to design. In the visible and hard x-ray regime polarisers are easy to produce. Designing polarimeters in the EUV will remain a difficult task, and the TONIX offers competitive performance.

Specifications

Size	200x200x300 mm
Weight	1.5 kg
Energy range	30-300 eV
Timescales (ps)	0-50 ps
Sensitivity (deg)	<1 deg (@10 ⁷ photons per pulse)

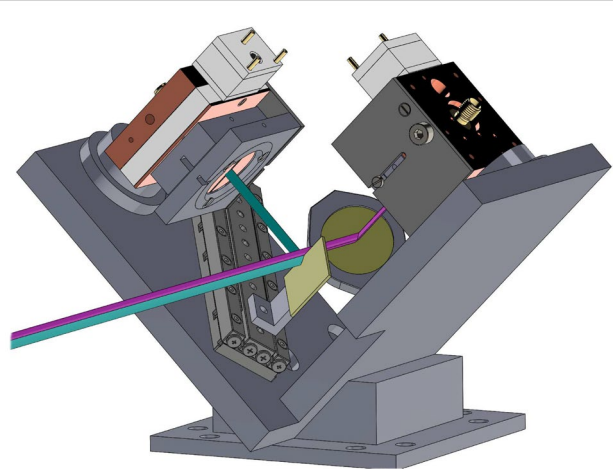
The TONIX combines the reflection properties of the Brewster angle with an exact halving of the incoming beam. A simple algorithm returns the polarisation angle of the incoming beam for each single pulse.

Diagram



Deliverables

- TONIX Polarimeter
- HV FLEX Power Supply
- Optional: Low Voltage Power Supply (0-15 V) for Improved MCP Signal



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