

Abstract Submitted  
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**Copper X-Pinch Characterization and Implementation as X-Ray Source for Talbot-Lau Deflectometry**<sup>1</sup> MILENKO VESCOVI, Pontif Univ Catolica de Chile, MARIA PIA VALDIVIA, Johns Hopkins University, FELIPE VELOSO, Pontif Univ Catolica de Chile, DAN STUTMAN, Johns Hopkins University, MARIO FAVRE, Pontif Univ Catolica de Chile — The use of a copper X-pinch as backlighting source for Talbot-Lau X-ray Deflectometry (TXD) is presented. The TXD technique can provide information about density gradients and elemental composition in HED plasmas, through single-image x-ray refraction and attenuation. In order to test the system in pulsed power environments, a TXD was implemented using a Cu X-pinch as X-ray source in the Llampüdkeñ generator ( $\sim 350\text{kA}$  in  $\sim 350\text{ns}$ ). A minimum source size of  $\sim 50\mu\text{m}$  was measured at the crossing point, with pulses of  $< 2\text{ns}$ ; as well as an extended x-ray source from the anode side of the array. Characteristic x-rays, as well as a broad continuum under  $5\text{keV}$  were detected. A Be object is used as probing object, measuring its density with a difference  $< 13\%$ . No damage from debris or magnetic field was observed in the gratings used for TXD, but it is shown that a protective filter is required. These results are relevant in order to adapt and design further pulsed power experiments that aim to use the Talbot-Lau technique to characterize pulsed plasmas.

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