

# PhotonMEADOW 2023

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## Wavefront sensing using Talbot effect for Shanghai High repetition rate XFEL and Extreme light facility (SHINE)

The SHINE aims at generating X-rays between 0.4 and 25 keV at rates up to 1MHz for 10 experimental stations. Wavefront sensing is important for aligning X-ray instruments, reconstructing the field at the plane of interest and conducting scientific experimental analysis. Based on the a Talbot interferometer at hard x-rays using a  $\pi$ -phase shift checkerboard grating, the wavefront accuracy sensitivity for WFS is better than  $\lambda/50$  at the wavelength of 0.177nm. The soft X-ray WFS covers energy from 200 eV to 2500 eV by changing the grating plane position with different grating periods. The grating plane motion region is approximately 0.5 m. The accuracy sensitivity in the soft X-rays region using a dot array grating is better than  $\lambda/50$ .

### Journal of Synchrotron Radiation Special Issue: will you submit your contribution?

yes

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