

# **Lensless Imaging with Fourier Transform Holography for Single Shot Science**

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*Invité par Jan LUNING*

**Vendredi 4 juillet à 15h00**  
**Petit Amphi Soleil – Bat. Accueil**

Capturing single-shot images on the nanoscale with x-ray free electron lasers will require techniques that are compatible with coherent, ultrafast, high-intensity x-ray pulses. Fourier transform holography (FTH) is one such technique. A key to realizing FTH at soft X-ray wavelengths is the integration of a nanoscale transmission mask with the sample. The mask, which defines the holographic object and reference beams, is fabricated by focused ion beam milling. Building upon these single-shot compatible principles, we have developed methods to extend the field of view, increase the signal-to-noise ratio, and a scheme for pump-probe imaging.

In this talk I will discuss proof-of-principle experiments performed on 3rd generation storage ring sources. This will include an introduction to FTH and its experimental implementation at x-ray wavelengths. By combining the principles of FTH to the practices of ultrafast measurement I propose methods for capturing ultrafast evolution on the nanoscale.

Finally I will describe the plane grating monochromator beam line at FLASH, the EUV Free Electron Laser in Hamburg, Germany. I will highlight a novel x-ray delay line system, which will allow a single ultrafast FEL pulse to be split, delayed temporally and recombined spatially.

**Formalités d'entrée** : accès libre dans l'amphi du Pavillon d'Accueil. Si la manifestation a lieu dans le Grand Amphi Soleil du Bâtiment Central, merci de vous munir d'une pièce d'identité (à échanger à l'accueil contre un badge d'accès).

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