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【803】Two-Color Diffractive Imaging of Helium Nanodroplets

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A recent feature of X-ray free electron lasers is the ability to produce two ultrashort pulses at different photon energies with a controlled time delay. We utilize these capabilities for X-ray pump X-ray probe coherent diffraction imaging to investigate ultrafast dynamics in nanoscale matter. This simultaneously yields information on the pristine sample and its evolved state with high spatial and temporal resolution.
Still, the challenge is to separate the two superimposed images on the detector. We developed algorithms for separating images of individual helium nanodroplets taken at the EuXFEL by analyzing single photon events in combination with two-color Mie modeling.

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