

A 1-D Imaging RIXS Spectrometer for Ultra-fast Phenomena and Non-Linear Science at European XFEL

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Resonant inelastic X-ray scattering (RIXS) is attracting increasingly growing interest due to its capability to study low energy excitations, in particular for strongly correlated materials. Its photon in-photon out nature offers an advantage in the context of spectroscopy using extremely brilliant FEL radiation, as it is insensitive to space charge effects. In the present talk we discuss an instrument for soft X-ray RIXS that has 1-D imaging capability in the direction perpendicular to the instrument dispersion direction. A planned application of the instrument is femtosecond time resolved studies at the small quantum systems (SQS) experiment station of the European XFEL. The imaging direction is oriented along the incoming XFEL beam onto or through the sample, so that a picoseconds time window is established, allowing femtosecond events to be observed and studied spectroscopically.