

Illuminating Biomolecular Complexity: X-ray Free Electron Lasers and Vibrational Spectroscopies for Protein, Aggregates, and Cellular Architectures



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Picosecond X-ray pulses at Elettra 2.0 with crab cavities

Picosecond-long x-ray pulses of moderate intensity and up to MHz CW repetition rate for time-resolved analysis of matter in the linear response regime are proposed for an upgrade operation of Elettra 2.0, now in construction as funded successor of the Elettra storage ring light source in Trieste, Italy. The scheme, based on the adoption of radiofrequency transverse deflecting cavities, promises a spectral flux at 1–10% level of the standard single bunch emission at the sample, transverse coherence in both transverse planes up to 0.5 keV photon energy, and it turns out to be simultaneous and largely transparent to the standard multi-bunch operation. The project well matches the view of an integration of storage ring and free electron laser communities, viewing their co-location as a crucial asset for advancing time-resolved science.

Scholarship eligibility

no

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