

THE CHALLENGES OF SEEDED FELS

G. De Ninno, ELETTRA, Basovizza, Trieste

Abstract

Basic users' expectations for the light produced by next generation FELs are:

- much higher peak brilliance than conventional synchrotron radiation and complete tunability in the VUV/X-ray spectral range;
- full transverse and longitudinal coherence of the radiation pulse;
- possibility of controlling pulse duration and spectral bandwidth;
- high shot-to-shot reproducibility, i.e. low power fluctuations, good pointing stability and reduced temporal jitter.

Seeded schemes appear nowadays as a way to satisfy all the above mentioned requirements. However, this achievement relies on the solution of several open technological and physical issues. In this paper we give a review of some of these challenges and discuss the expected performance of future seed-based FELs.

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