

Improving temporal coherence and generating shorter pulses in the FEL

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There is significant scientific interest in reducing pulse durations and improving the temporal coherence of the output from short-wavelength (X-ray) FELs. In this talk I will review some of the methods that researchers in the UK have proposed towards these goals. It is hoped that some of these options may shape any future UK Light Source and ensure that the next generation of designs will provide users with a unique class of world-leading sources that can generate high-power pulses with the spatial and temporal resolution of the atom (x-ray, attosecond pulses at multi- GW powers). In order to assist this research, a broad-bandwidth 3D simulation code 'Puffin' has been developed and its capabilities will briefly be described.