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## Coherent and Ultrashort Soft X-Ray Pulses from Echo-Enabled Harmonic Cascade FEL

*Tuesday, 23 August 2022 11:00 (30 minutes)*

Shanghai Soft X-ray FEL facility (SXFEL) is the first X-ray FEL facility in China. Various external seeding techniques have been adopted for improving the performance of SXFEL. Here we report on the first demonstration of echo-enabled harmonic cascade (EEHC) for generating coherent and ultrashort soft X-ray pulses. Benefiting from the superiority of low sensitivity to the electron beam imperfections and flexible output pulse control of EEHC, nearly transform-limited soft X-ray pulses with tunable pulse durations have been successfully generated. These experiments exceed the current limitations of external seeding techniques and may open up new opportunities for extending external seeded FEL to shorter wavelength range.

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Yes

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