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Demonstration of a reliable, high gain laser plasma accelerator driven free electron laser at BELLA

Tuesday 12 August 2025 10:00 (30 minutes)

Laser plasma accelerators (LPAs) have emerged as a viable alternative to traditional accelerators for various applications, thanks to their capability to generate high-brightness beams and much higher accelerating gradients. This enables more compact designs for future light sources, such as free electron lasers (FELs). FEL technology leveraging LPA sources is progressing swiftly, with several key milestones achieved in recent years. However, significant work remains to be done to move from proof-of-concept experiments to the dependable operation of LPA-driven FELs. Recent initiatives at the BELLA center's Hundred Terawatt Undulator beamline, which includes an electron beam transport section leading to a 4-meter-long, strong focusing undulator, have successfully demonstrated the consistent operation of a high-gain FEL in the SASE regime. SASE gain is detectable on 90% of shots with measured SASE gain in excess of 1000.

Please consider my poster for contributed oral presentation

No

Would you like to submit this poster in student poster session on Sunday (August 10th)

No

Footnotes

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I have read and accept the Privacy Policy Statement

Yes

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