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Design of a four-mirror bow-tie cavity based free electron laser oscillator for eliminating spectral gaps

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FELiChEM is an infrared free electron laser (FEL) user facility located in China, covering a wavelength range of 2-200 μm. Many spectral gaps were measured which the user experiments did not expect, especially in the far-infrared wavelength region from 50-200 μm. In this paper, we propose to apply a bow-tie cavity resonator instead of the conventional resonators to eliminate all the spectral gaps. Numerical simulation results demonstrate that this innovative resonator configuration can effectively eliminate the spectral gaps and significantly enhance the performance of long-wavelength lasers.

Footnotes

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