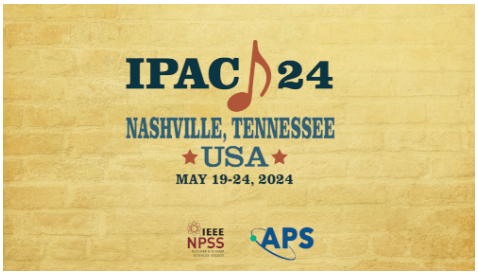

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The achievement of independently-tunable two-color lasing at the FHI FEL

Monday, 20 May 2024 16:00 (2 hours)

The Fritz-Haber-Institut (FHI) der Max-Planck-Gesellschaft Free Electron Laser (FEL) achieved first light from its Mid-IR beamline at 18 microns on February 14, 2012. In the subsequent years, the 3 to 60 micron light has been supplied to users resulting in 96 refereed publications in Chemical Physics. In 2019, the FEL Group initiated an upgrade to add a Far-IR beamline to the system. On June 8, 2023, first light was achieved at 8 microns from this beamline which spans 4.5 to 165 microns in tunable radiation. A unique feature of this upgrade is the inclusion of a 500 MHz kicker cavity that can send the 1 GHz electron pulses alternatively into the MIR and FIR beamlines. On December 8, 2023, first light was obtained simultaneously at 18 and 55 microns respectively, thereby achieving the project goal of independently-tunable two-color lasing. We will discuss the physics and engineering design of the new FIR beamline and provide details of the radiation spectrum and parameters. We will also outline planned user experiments using this new radiation tool.

Footnotes

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