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Special Issue Reprint

Oscillator-Amplifier Free Electron Lasers an Outlook to Their Feasibility and Performances

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This reprint is aimed at presenting strategic and design elements for the development of low-cost, low-size Free Electron Lasers.

Different points of view are considered here, attempting to consider technologies and design conceptions that are fairly mature and may be viable solutions in the near or midterm future.

The design conceptions proposed here are based on the so-called hybrid (or broader-approach) technologies, which put together, e.g., combinations of oscillator and amplifier configurations.

These solutions, although developed almost thirty years ago, appear nowadays within the present technological capabilities.

Other possibilities offered, for example, by the recirculated wave undulator FELs, represent border line technologies, which are worth carefully studying as the architecture of the mid-term future. Finally, the reprint addresses both theoretical and design considerations regarding proposals for the enhancement of coherent emission on higher harmonics.

