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Design, fabrication, and characterization of 3D-printed photonic crystals for THz filtering applications in particle accelerator

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The advancement of broadband terahertz (THz) sources has become increasingly important for various scientific and technological applications, including those in particle accelerators. To enable tunable and flexible THz source development, components capable of selective THz spectrum filtering are essential. In this work, we investigate the use of 3D-printed photonic crystal structures, specifically woodpile designs, for THz filtering applications. Using high-precision digital light processing (DLP) 3D printing, we successfully fabricate woodpile photonic crystals with high accuracy. The fabricated structures demonstrate effective spectral filtering capabilities within the THz range, offering promising potential for applications in advanced accelerator technology and related fields.

Footnotes

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