

Abstract Submitted
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Wake-Field Reduction in Hybrid Photonic Crystal Cavities

DANNY REHN, GREG WERNER, CARL BAUER, University of Colorado, JOHN CARY, University of Colorado; Tech-X Corporation, CIPS BEAMS TEAM, TECH-X CORPORATION TEAM — Photonic crystals (PhCs) have attractive properties for manipulating electromagnetic radiation. In one application, PhCs are composed of a number of dielectric rods that can be arranged to make an accelerator cavity. These structures trap an accelerating mode and allow higher order modes to propagate out. Previous work showed that PhC structures allow excitation of unwanted transverse wake-fields that can disrupt the beam and limit luminosity levels. This work focuses on optimizing PhC cavities to reduce transverse wake-fields by minimizing the Q-factor of unwanted modes, while keeping the Q-factor of the accelerating mode high. The transverse wake-fields in the new optimized structures are compared with previously optimized structures and the CLIC cavity with HOM damping.

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