471. Title:Resonant excitation of coherent Cerenkov radiation in dielectric lined waveguides
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Source title:Applied Physics Letters
Volume:98
Issue:20
Issue date:May 16, 2011
Publication year:2011
Language:English
Document type:Journal article (JA)

Abstract:We report the observation of coherent Cerenkov radiation in the terahertz regime emitted by a relativistic electron pulse train passing through a dielectric lined cylindrical waveguide. We describe the beam manipulations and measurements involved in repetitive pulse train creation including comb collimation and nonlinear optics corrections. With this technique, modes beyond the fundamental are selectively excited by use of the appropriate frequency train. The spectral characterization of the structure shows preferential excitation of the fundamental and of a higher longitudinal mode.