One-dimensional photonic bandgaps in a superconductor/dielectric superlattice C.-J. WU\(^1\), National University of Kaohsiung, C.-C. LIU\(^2\), National Formosa University, T.-J. YANG\(^3\), National Chiao-Tung University — Photonic bandgaps for a superconducting/dielectric periodic layered structure are illustrated from the transmittance spectrum that is calculated based on the Abeles theory for the stratified medium and the two-fluid model for superconductors. The result shows a three-bandgap structure. The first band and low frequency band gap are consistent with those predicted according to the transfer matrix method along with the Bloch theorem. The second and third bands as well as the bandgaps however can not be seen from the Bloch wave solution. The low frequency gap is shown to decrease apparently with increasing the London penetration depth, whereas the other two bandgaps are not sensitive to penetration depth. We also discuss the bandgaps as a function of the incidence angle.

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