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Propagation of Electromagnetic Waves in a One Dimensional Photonic Crystal with DPS/DNG Layers JOSEPH SHAHBAZIAN, ARAM KARAKASHIAN, UML — Although materials having positive permittivity and permeability (DPS) are well known, recently electromagnetic materials with negative permittivity and permeability (DNG) have been given much attention. Wave propagation in a double negative medium and also photonic crystals has been studied analytically and experimentally. The material parameters are complex and frequency dependent to account for both dispersion and absorption. The real part of the corresponding index of refraction can be negative only in narrow frequency bands. Here we have studied theoretically the propagation of electromagnetic waves in a one dimensional photonic crystal composed of alternating layers of DNG and DPS layers. We find that this type of photonic crystal in the visible wave range exhibits negative refraction in a wider frequency range.

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