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Backward third-harmonic pulse generation in a one-dimensional PIM/NIM structure

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In this work, a set of couple-mode equations for describing a backward third harmonic generation (BTHG) in a one-dimensional periodic structure of positive-index material (PIM) layers and third-order nonlinear negative-index material (NIM) layers is analyzed using multiple-scale method. Due to the negative-index phase matching and band-edge field enhancement the intensities of backward third-harmonic pulse generated from the PIM/NIM periodic structure is increased for 100 time of those generated from a single NIM medium.

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