

# Interesting Band Properties of One-Dimensional Photonic Crystals Containing Epsilon-Negative Layers

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The transmission properties of one-dimensional photonic crystals constituted by a periodic repetition of positive-index layers and epsilon-negative layers are studied theoretically. This structure shows some interesting properties including a wide gap in the low frequency range for small period number and a comb-like transmission band in the gap. The properties of the comb-like transmission band are sensitive to the period number of the structure. In contrast to the zero- $\bar{n}$  gap and the zero- $\phi_{\text{eff}}$  gap, the transmission properties are dependent on the structure parameters. A general method to decide the position of gap and transmission band in this kind of structure is also presented.

*Key words:* One-Dimensional Photonic Crystals; Epsilon-Negative; Transmission.

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