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**The rule for broadening of band-gaps in biperiodic photonic crystals.** (English)

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Summary: In a photonic crystal with biperiodic structures there is an effective “beat” of the distribution of refractive index. It is revealed in this Letter that, if the ratio of the period of the “beat” to the period of the separate single structure is smaller than a certain value, the two gaps in the biperiodic photonic crystals will be separate. If the ratio is larger than that value, the two gaps will overlap partially. When the ratio has a just correct value, the top of one gap and the bottom of the other gap are at a same position, and the photonic crystal will give a forbidden band with a width of twice that each separate gap approximately. Hence, a maximum band-gap will be obtained.

**MSC:**

82D25 Statistical mechanics of crystals

**Full Text:** [DOI](#)

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