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Periodic topographic open wave guides : theoretical and computational aspects

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We consider the propagation of waves in a periodic structure that can be represented as a infinite thick graph. We show that, provided that adequate boundary conditions are satisfied, the introduction of a lineic geometric perurbation of this reference structure can create the apparition of guided waves associated to frequencies inside any band gap of the periodic medium. The proof is based on an asymptotic analysis with respect to the thickness of the graph. We also explain how to compute such waves. The method ins based on specific transparent conditionds for periodic media.

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