

Photonic fibres from thin structures

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Abstract

I will start by outlining a general operator formulation for elliptic differential operators of second order in spaces of functions that are square integrable with respect to a period Borel measure. I will then describe particular features of this formulation in the case when the measure is translation-invariant in a chosen direction and obtain an equivalent family of two-dimensional formulations. In the case of the Maxwell system of electromagnetism and a measure supported on a union of planes, I will describe a class of wave propagating in the direction of translation invariance and present the results of the analysis of the associated spectrum, obtained by considering a special family of periodic weighted quantum graphs.