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The effect of stochasticity on linear waves

We study the propagation of linear waves through a medium whose properties can vary both in space and in time. If we assume that the wave speed is separable then we obtain that the stability of the waves is determined by a generalized Mathieu's equation (Poulin & Flierl, 2008). By numerically integrating this equation using a symplectic method we determine that the stochasticity can either diffuse or localize the wave depending on the nature of the medium.