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Internal wave beam propagation in nonuniform stratifications

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In addition to being observable in laboratory experiments, internal wave beams are reported in geophysical settings, which are characterized by nonuniform density stratifications. Here, we use plane wave techniques to investigate the propagation of linear internal wave beams in nonuniform density stratifications. Transmission and reflection coefficients, which can differ greatly for different physical quantities, are determined for sharp and finite-width interfaces. Under certain conditions, which do not necessitate evanescent layers, wave beam ducting occurs. Experimental results complement the theoretical predictions, and we discuss geophysical applications.