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**Analyzing emission, reflection and diffraction of internal waves using the Hilbert transform** MATTHIEU MERCIER, NICOLAS GARNIER, THIERRY DAUXOIS, Laboratoire de Physique, ENS Lyon (FRANCE) — Hilbert Transform applied to two-dimensional internal waves allows a greater understanding of fundamental experiments such as diffraction and reflection. Robustness of this technique based on time and spatial filtering is tested through different types of internal waves generated using a recently developed wavemaker. The analysis of wavefields radiated by a slit and due to an incoming internal plane wave (whose wavelength is comparable to the width of the slit) reveals a diffraction-like pattern. Although differences from the optical phenomenon due to the atypical nature of internal waves are evident, they can be explained with the same principle than “classical” diffraction. The study of reflection of internal plane waves using the Hilbert transform focuses on the search for a possible back-reflected beam. In the case of internal plane waves reflecting on a plane slope, no back-reflected beam is observed as predicted by theory. But the case of concave/convex surfaces remains opened.

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