Parametric subharmonic instability (PSI): from internal plane waves to realistic beams THIERRY DAUXOIS, CNRS & ENS de Lyon, BAPTISTE BOURGET, SYLVAIN JOUBAUD, PHILIPPE ODIER, HÉLÈNE SCOLAN, ENS de Lyon — We study experimentally the parametric subharmonic instability, which corresponds to the destabilization of a primary plane wave and the spontaneous emission of two secondary waves, of lower frequencies and different wave vectors. We show how, using a time-frequency analysis and a Hilbert transform, one can characterize precisely the instability. Moreover, we present results showing the crucial importance of the finite width when considering beams. Experiments and numerical results will be discussed in relation with a new theoretical approach. The latter brings new insights on energy transfers in the ocean where internal waves with finite size beams are dominant.

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