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Experiments on Rotating and Reflecting Internal Wave Beams

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We present the results of two sets of experiments on internal wave beams; one concerns conical beams in a rotating fluid and the other concerns the reflection of planar beams from inclined surfaces. The theory of linear disturbances is well known for the rotating system, as it is relavent to phenomena in the ocean and atmosphere (Le Blond and Mysak), but direct experimental verification of the cut-off frequencies and inclination angles seems not to have been previously performed. The reflection of planar beams from inclined surfaces is the subject of a more recent theoretical study (Tabaei and Akylas), which predicts the generation of second harmonic beams via a nonlinear mechanism. The orientation of the reflected beams is dictated by the slope of the inclined surface, and we present the first set of experimental results on this matter. For both sets of experiments visualization is performed using the synthetic schlieren technique.

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