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Observation of depth-induced properties in wave turbulence on the surface of a fluid

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We report the observation of changes in the wave turbulence properties of gravity-capillary surface waves due to a finite depth effect. When the fluid depth is decreased, a hump is observed on the wave spectrum in the capillary regime at a scale that depends on the depth. The possible origin of this hump is discussed. In the gravity regime, the wave spectrum still shows a power law but with an exponent that strongly depends on the depth. A change in the scaling of the gravity spectrum with the mean injected power is also reported. Finally, the probability density function of the wave amplitude rescaled by its rms value is found to be independent of the fluid depth and to be well described by a Tayfun distribution.

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