

Abstract Submitted  
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**Observation of star-shaped surface gravity waves** JEAN RAJCHENBACH, Laboratoire de Physique de la Matière Condensée CNRS UMR 7336, Université de Nice - Sophia Antipolis, Nice, DIDIER CLAMOND, Laboratoire J.-A. Dieudonné CNRS UMR 7351, Université de Nice - Sophia Antipolis, Nice, ALPHONSE LEROUX, Laboratoire de Physique de la Matière Condensée CNRS UMR 7336, Université de Nice - Sophia Antipolis, Nice — We report a new type of standing gravity waves of large amplitude, having alternatively the shape of a star and of a polygon. This wave is observed by means of a laboratory experiment by vibrating vertically a tank. The symmetry of the star (i.e. the number of branches) is independent of the container form and size, and can be changed according to the amplitude and frequency of the vibration. We show that this wave geometry results from nonlinear resonant couplings between three waves, although this possibility was denied for pure gravity waves up to now.

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