

Abstract Submitted
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Experimental study of breaking and energy dissipation in surface waves¹ GERARDO RUIZ CHAVARRIA, Facultad de Ciencias, Universidad Nacional Autonoma de Mexico, PATRICE LE GAL, MICHAEL LE BARS, IRPHE, UMR 7342, CNRS, Aix-Marseille University — We present an experimental study of the evolution of monochromatic waves produced by a parabolic wave maker. Because of the parabolic shape of the wave front, the waves exhibit spatial focusing and their amplitude dramatically increases over distances of a few wavelengths. Unlike linear waves, the amplitude of the free surface deformation cannot exceed a certain threshold and when this happens the waves break. In order to give a criterion for the appearance of breaking, we calculate the steepness defined as $\varepsilon = H/\lambda$ (where H is the wave height and λ their wavelength) for waves of frequencies in the range 4-10 Hz. We found that wave breaking develops when ε attains approximately a value of 0.10. We also evaluate the lost of energy carried by the waves during their breaking by a detailed and accurate measurement of their amplitude using an optical Fourier transform profilometry.

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