

Abstract Submitted
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Extreme Wave Impact on a Flexible Plate ALIZA ABRAHAM, ALEXANDRA TECHET, MIT — Digital image correlation (DIC) and particle image velocimetry (PIV) are combined to characterize the flow-structure interaction of a breaking wave impacting a flexible vertically mounted plate. DIC is used with the beam bending equation to determine the stresses on the plate and PIV is used to describe the flow of the wave. In this experiment, a simulated dam break in which water is rapidly released from a reservoir generates the wave, which impinges on a cantilevered stainless steel plate downstream. Pressure sensors mounted on the plate are used to gather further information about the forces acting on it. A series of waves of different heights and breaking locations are tested, controlled by the volume of water in the tank and the volume of water in the dam break reservoir. The deflection of the plate varies depending on the point of breaking and the height of the wave. These results shed light on the effect of breaking wave impacts on offshore structures and ship hulls.

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