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Session X39: Interfacial Phenomena II
8:00 AM–10:36 AM, Tuesday, November 21, 2023
Room: 204B

Chair: Palas Kumar Farsoiya, Princeton University

Abstract: X39.00005 : Laboratory Measurements of Capillary-gravity Wave Scattering from Barriers with Contact Line Effects*
8:52 AM–9:05 AM

← Abstract →

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Contact lines at a three-phase boundary (solid, liquid and air) play an essential role in the dynamics of the free surface of liquids in surface-tension-dominated fluids. While previous studies on the contact line effect have mainly focused on frequency and damping of standing wave modes in capillary dynamics, our study focuses on the contact line effect on capillary-gravity wave scattering from barriers. Models have predicted the contact line effects on capillary-gravity wave scattering from a barrier in ideal fluid configurations, but the lack of experimental data has hindered the progress. This research presents an experimental study that utilizes an acoustic approach to measure variations of the scattering with the barrier depth, barrier width, and surface wave frequency. Our study provides both evidence and quantitative measurements of the contact line effect on capillary-gravity wave scattering in realistic fluid configurations.

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