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Capillary waves on a periodically supported liquid cylinder in low gravity[1] DAVID THIESSEN, FAHIM CHANDURWALA, LIKUN ZHANG, Washington State University — The impact of a droplet on a capillary channel consisting of a helical wire filled with water generates capillary wave packets that propagate away from the impact zone helping to dissipate the droplet kinetic energy. A simplified model is presented for the channel consisting of a periodic array of wire rings that penetrate the surface of the liquid. The multiple scattering problem for monochromatic capillary waves on a liquid cylinder impinging on an array of concentric rings is solved by the finite element method (FEM) with radiation boundary conditions at each end. Contact lines are taken to be pinned on the wires. In the limit of wires of infinitesimal thickness the FEM results agree with a semi-analytical theory. The results also allow the determination of an effective wave speed. Finally, results of experimental measurements of wave-packet speed on small horizontal capillary channels will be discussed.

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