

Abstract Submitted  
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**Spreading and wetting of impacting drops: Three-dimensional simulations using Conformal Decomposition Finite Elements<sup>1</sup>** SCOTT ROBERTS, JEREMY LECHMAN, Sandia National Laboratories — Understanding the spreading and wetting of liquid drops impacting a solid substrate is of interest to many industrial processes, including coating, printing, and thermal spray processes. Depending on the contact angle and wetting behavior, these drops can exhibit many shapes, including disks, crowns, and rebounding drops. Despite its importance, accurately capturing these dynamics using numerical simulations remains a daunting task. In this talk, we use a new Conformal Decomposition Finite Element Method (CDFEM), which seeks to capture the benefits of both moving-mesh and level-set methods, to study drop impact and spreading. Three-dimensional simulations are performed and interface profiles and drop spreading ratios are compared to previous experimental and theoretical studies. The strength of this method is also demonstrated in more complicated geometries, where three-dimensional simulations are necessary.

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