

Abstract Submitted  
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**Self healing: solid spheres impacting soap bubbles** TAYLOR KILLIAN, JOSHUA BRYSON, JORDAN HUEY, Brigham Young University, JAMES C. BIRD, Boston University, JEAN-CHRISTOPHE NAVE, McGill University, TADD TRUSCOTT, Brigham Young University — Under the right conditions a moving sphere may pass through a stationary soap bubble without rupturing it. At impact, the sphere forms a cavity in the soap film that often facilitates reparation after collapse. This interaction leaves a small film surrounding the sphere as it passes through the center of the bubble. In contrast, as the sphere passes through the opposite side of the bubble, rupture is more likely. The physics behind this phenomenon are not well understood, nor the limiting factors of this interaction. We explore the phenomenon using high-speed photography. Our observations reveal that there are several distinct cavity regimes. We present the parameters for drainage, rupture and reparation each of which are related to curvature gradients.

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