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Nota di contenuto	Introduction -- Freely Accelerating Impact into Cornstarch and Water Suspensions -- Dynamic Jamming Fronts in a Model 2D System -- Speed-Controlled Impact into Cornstarch and Water Suspensions -- Results and Conclusions -- A: Penetration Regime in Freely Accelerating Impact -- B: Details of X-Ray Experiments -- C: Detailed Discussion of Added Mass -- D: "Viscous" Model for Impact -- E: Cornstarch Particle Modulus -- F: 1D Model of Particles Immersed in a Viscous Liquid.
Sommario/riassunto	This thesis approaches impact resistance in dense suspensions from a new perspective. The most well-known example of dense suspensions, a mixture of cornstarch and water, provides enough impact resistance to allow a person to run across its surface. In the past, this phenomenon had been linked to "shear thickening" under a steady shear state attributed to hydrodynamic interactions or granular dilation.

However, neither explanation accounted for the stress scales required for a person to run on the surface. Through this research, it was discovered that the impact resistance is due to local compression of the particle matrix. This compression forces the suspension across the jamming transition and precipitates a rapidly growing solid mass. This growing solid, as a result, absorbs the impact energy. This is the first observation of such jamming front, linking nonlinear suspension dynamics in a new way to the jamming phase transition known from dry granular materials.