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Visualizing Air Around a Splashing Drop KELLY W. MAUSER, Department of Physics, Colorado State University, IRMGARD BISCHOFBERGER, SIDNEY R. NAGEL, James Franck Institute and Department of Physics, University of Chicago — It is well known that when a drop impacts a surface at a large enough velocity it will splash. However, it was recently discovered that removing the surrounding air from a drop can suppress splashing completely. This discovery still remains unexplained. Not only is it not understood why the air matters but it is also not even known where the liquid-air interaction is important: Is it beneath the drop, is it at the drop's edge or is it at the drops upper surface? Using modified schlieren optics combined with high-speed video imaging, we were able to visualize vortices in the air that were created when the drop spread out rapidly after hitting the substrate. These vortices varied with impact velocity and splash type. We are currently measuring the strength of forces created by the air on the upper surface of the drop in order to confirm our tentative conclusion that it is the air above the spreading drop that plays the dominant role in creating a splash.

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