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**Interactions of Dislocations with Twin Boundaries in Hard-Sphere Colloidal Crystals** MARIA PERSSON GULDA, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, United States, ERIC MAIRE, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, United States and MATEIS, INSA-Lyon, Villeurbanne, France, DAVID WEITZ, Department of Physics, Harvard University, Cambridge, MA, United States, FRANS SPAEPEN, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, United States — The interaction of dislocations with twin or grain boundaries is a key factor in understanding the strength and strain hardening of crystals. Confocal tracking of particles in a colloidal crystal allows a detailed look at the mechanisms of such interactions at the particle scale, analogously to what happens on the atomic scale in conventional crystals. The grain boundaries are prepared by sedimentation onto templates in the [110] $\Sigma 3$ orientation. A complex set of interactions is observed: additional twinning, the emission of a pair of partial dislocations, and the formation of kinks in the original twin boundary.

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