Electromagnetic Fluctuations during Fast Reconnection in a Laboratory Plasma
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Abstract
Clear evidence for a positive correlation is established between the magnitude of magnetic fluctuations in the lower-hybrid frequency range and enhancement of reconnection rates in a well-controlled laboratory plasma. The fluctuations belong to the right-hand polarized whistler wave branch, propagating obliquely to the reconnecting magnetic field, with a phase velocity comparable to the relative drift velocity between electrons and ions. The short coherence length and large variation along the propagation direction indicate their strongly nonlinear nature in three dimensions.