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## Holographic recording of fast phenomena

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We report on a holographic method for recording fast events whose speed is limited by the laser pulse duration if the recording material has sufficient sensitivity to reliably record a frame of the fast event with a single pulse. The method we describe uses the angular selectivity of thick holograms to resolve frames that are recorded with adjacent pulses. Two specially designed cavities are used to generate the signal and reference pulse trains. We experimentally demonstrate the system by recording laser induced shock waves with a temporal resolution of 5.9 ns, limited by the pulse width of the *Q*-switched Nd:yttrium–aluminum–garnet laser used in the experiments. © 2002 American Institute of Physics. [DOI: 10.1063/1.1446205]