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Backward Stimulated Raman Scattering from 30 fsec 200 TW pulses in laser wakefield acceleration experiments Y. HOROVITZ, T. MATSUOKA, C. MCGUFFEY, S.S. BULANOV, V. CHVYKOV, P. DRAKE, F. DOLLAR, C. HUNTINGTON, G. KALINTCHENKO, P. ROUSSEAU, V. YANOVSKY, A. MAKSIMCHUK, K. KRUSHELNICK, University of Michigan, Ann Arbor — Backward stimulated Raman scattering (B-SRS) is an important process in high energy laser-plasma experiments in the context of inertial confinement fusion. However this phenomenon has never previously been studied during the interaction of high power femtosecond pulses with plasmas. We have performed the first experiments in this regime and have measured the spectral shape and efficiency of backscattered SRS light during interactions with 30 fsec pulses with low density plasmas at powers up to 200 TW. The spectrum of the Raman backscattered light was observed to be extremely modulated. For lower power interactions in certain regimes a correlation with relativistic electron beam generation could also be observed.

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