

Experiments on Laser Channeling for Standard Laser Wakefield Accelerators at LBNL,
W.P. LEEMANS, P. VOLFBEYN, LBNL - Laser driven plasma based accelerators have the potential of producing ultra high gradients (>10 GV/m) which, provided long acceleration distances can be realized, result in high net energy gain over distances much shorter than conventional accelerators. To extend the acceleration distance beyond the diffraction distance of a focused intense laser pulse, plasma channel guiding has been proposed. A comprehensive study is underway at Lawrence Berkeley National Laboratory on laser produced plasma channels. Time resolved interferometry using an ultrashort probe pulse has been used to study channel formation as a function of laser pulse duration and laser energy. Recent experimental results and simulations of the production and characterization of these plasma channels as well as guiding of high intensity laser pulses will be presented. The effect of the channel shape on the accelerating mode profiles for laser wakefield accelerators will be discussed.

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