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Plasma based wakefield acceleration using a 46MeV multi-bunched electron beam EFTHYMIOS KALLOS, TOM KATSOULEAS, PATRIC MUGGLI, USC, ILAN BEN-ZVI, IGOR POGORELSKY, VITALY YAKIMENKO, IGOR PAVLISHIN, KARL KUSCHE, MARCUS BABZIEN, BNL, FENG ZHOU, UCLA, WAYNE KIMURA, STI Optronics — In the multibunch plasma wakefield acceleration scheme a series of electron microbunches are fed into a high density plasma and resonantly excite a wakefield that can accelerate the beam electrons. Here we present some recent experimental results conducted at Brookhaven's Accelerator test Facility (ATF) where ∼90 microbunches at 46MeV created through the IFEL effect with a 10.6μm CO_2 laser interact with a high density 10^{19}cm^{-3} 12mm long plasma. Some further PIC simulations provide insight into the physics of the interaction.

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