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Experimental Results from a Resonant Dielectric Laser Accelerator[1] RODNEY YODER, Goucher College, Baltimore, MD, USA, JOSHUA MCNEUR, ESIN SOZER, GIL TRAVISH, KIRAN SHANKAR HAZRA, University of California, Los Angeles, BRIAN MATTHEWS, California Nanoscience Center, University of California, Los Angeles, JOEL ENGLAND, SLAC Linear Accelerator Center, Stanford, CA, USA, EDGAR PERALTA, ZIRAN WU, Dept. of Applied Physics, Stanford University, Stanford, CA, USA — Laser-powered accelerators have the potential to operate with very large accelerating gradients ($\sim$ GV/m) and represent a path toward extremely compact colliders and accelerator technology. Optical-scale laser-powered devices based on field-shaping structures (known as dielectric laser accelerators, or DLAs) have been described and demonstrated recently. Here we report on the first experimental results from the Micro-Accelerator Platform (MAP), a DLA based on a slab-symmetric resonant optical-scale structure. As a resonant (rather than near-field) device, the MAP is distinct from other DLAs. Its cavity resonance enhances its accelerating field relative to the incoming laser fields, which are coupled efficiently through a diffractive optic on the upper face of the device. The MAP demonstrated modest accelerating gradients in recent experiments, in which it was powered by a Ti:Sapphire laser well below its breakdown limit. More detailed results and some implications for future developments will be discussed.

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