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High Frequency ELM Pacing by Lithium Pellet Injection on DIII-D[1] A. BORTOLON, R. MAINGI, D.K. MANSFIELD, A. NAGY, A.L. ROQUEMORE, R. LUNSFORD, PPPL, G.L. JACKSON, T.H. OSBORNE, P.B. PARKS, GA — Full-shot, high-frequency pacing of edge localized modes (ELM) by lithium pellet injection has been demonstrated in DIII-D. A Lithium Granule Injector (LGI), recently installed on DIII-D to study pacing efficiency dependence on granule size and velocity, was tested in different ELMy scenarios (β_N =1.2-2.0) injecting granules of nominal diameter 0.3-0.9 mm, with injection speed 50-120 m/s and injection rates up to 500 Hz. Robust ELM pacing was documented on time windows up to 3.5 s, with triggering efficiency close to 100% obtained with 0.9 mm diameter granules, lower with smaller sizes and weakly dependent on granule velocity. Paced ELM frequencies up to 100 Hz were achieved, with a 2-5 fold increase over the natural ELM frequency and a consequent reduction of divertor peak heat flux. Overall, LGI high frequency pacing appeared to be compatible with high plasma performance, in terms of global confinement and pedestal characteristics.

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A. Bortolon
Princeton Plasma Physics Laboratory

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