Harvard University Solid Earth Physics Seminar
1:15 p.m. Tuesday 11 February 2014
Dept. EPS Faculty Lounge, 4th Floor,
Hoffman Laboratory, 20 Oxford St.

Reproducing the 2002 Denali, Alaska Earthquake in the Laboratory

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Abstract: A notable feature of the 2002 Mw 7.9 Denali, Alaska, earthquake was that a unique set of near-field seismic ground motion records, at Pump Station 10 (PS10), captured the passage of a supershear rupture followed by what was surmised to be a secondary slip pulse, 'Trailing Rayleigh Pulse' (Dunham and Archuleta, 2004; Mello et al., 2010). Motivated by the unique features contained in these near-field ground motion records, which were obtained only 3 km away from the fault, a series of scaled laboratory earthquake experiments was conducted in an attempt to replicate the dominant features of the PS10 ground motion signatures. Particle velocity records bearing a striking similarity to the Denali ground motion records are presented and discussed. The success of the comparison opens up the possibility of routinely generating near source ground motion records in a scaled and controlled laboratory setting that could be of great societal interest towards assessing seismic hazard from large and potentially devastating earthquakes.