Abstract Submitted
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Acceleration of thin flyer foils with a 1 MA pulsed power device for shock-wave experiments in clumpy foam targets[1] STEPHAN NEFF, JESSICA FORD, DAVID MARTINEZ, CHRISTOPHER PLECHATY, SANDRA WRIGHT, RADU PRESURA, University of Nevada, Reno — The dynamics of shock waves in clumpy media are important for understanding many astrophysical processes, including the triggering of star formation in interstellar gas clouds by passing shock waves. This phenomena can be studied in the laboratory by launching a flyer plate into a low density foam with clumps. Low density foams offer the advantage of relative low sound speeds (a few hundred meters per second) compared to normal solids, thus reducing the flyer speed required to create shock waves. In first experiments aluminum foils with thicknesses between 20 micrometer and 130 micrometer were accelerated to speeds up to 2.3 km/s. In addition, the impact of the flyers on plexiglas targets was studied. Additional measurements will focus on optimizing the flyer properties (thicker flyers, higher velocities) and on characterizing the flyer in more detail (temperature of the flyer and plasma ablation from the flyer). The results of these measurements will be used to design an experiment studying the dynamics of shock waves in clumpy foams, using the 100 TW laser system Leopard for back-lighting the foam target.

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