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Astrophysical jet experiments with colliding laser-produced plasmas CHRIS GREGORY, LULI, Ecole Polytechnique, France, JON HOWE, University of York, UK, BERENICE LOUPIAS, LULI, Ecole Polytechnique, France, SIMON MYERS, University of York, UK, MARGARET NOTLEY, Central laser facitily, UK, YOUICHI SAKAWA, Institute of Laser Engineering, Osaka, Japan, AKIRA OYA, RYOSUKE KODAMA, Graduate School of Engineering, Osaka, Japan, MICHEL KEONIG, LULI, Ecole Polytechnique, France, NIGEL WOOLSEY, University of York, UK — We present the results of experiments in which jets are created through the collision of two laser-produced plasmas. These experiments use a simple 'v-foil' target design: two thin foils are placed at an angle of 140 degrees to each other, and irradiated with a high-energy laser. The plasmas from the rear face of these foils collide and drive plasma jets moving with a velocity of $\sim$ 300 km/s. By choosing the foil thickness and material to suit the laser conditions available, it has proven possible to create plasma jets for which the relevant scaling parameters show significant overlap with those of outflows associated with young stellar objects (YSOs). Preliminary results are also shown from experiments to study the effect of an ambient gas on jet propagation. Nominally identical experiments are conducted either in vacuum or in an ambient medium of 5 mbar of nitrogen gas. The gas is seen to increase the jet collimation, and to introduce shock structures at the head of the outflow.

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