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Dynamic Behaviors of Lead Plate Driven by Collision of Head-on Sliding Detonations CHONGYU ZHANG, HAIBO HU, QINGZHONG LI — The dynamic behaviors of lead plate driven by head-on sliding detonation waves were characterized. Experimental records have shown a jet like bulging in the collision region, size of which extended rapidly after the collision of the head-on detonation waves because of the obvious speed gradients of particles inside the bulging from the tip to the bottom of the bulging. Multi-layer like structures by height of the collision bulging were recorded, which should be related to the detailed structure of loading front formed in the result of the impact of two symmetric detonation fronts. The mass densities inside the bulging structure fixed by the pulsed X-ray radiography were evaluated at the level of 1%∼10% from the initial density of lead. The dynamic strength and shock melting should have played dominate role in the formation of the initial stage and the evolution of cavitation and fragmentation process should have finished merely in several microseconds inside the continuum of melted lead under the intensive tension of release wave, in the result of which a porous or dispersed state bulging was formed.

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