About laser shocks dynamics for complex spot and structured targets

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We have analyzed the laser induced shock behavior in experiments with double focal spot, in particular, the cumulative effect in double layer foam-metal targets (which is explained by the multiple collisions of individual shocks in the structured target) \[1\]. Two focal spots were obtained by the laser beam splitting. A photographic objective has been employed to image the target rear face onto a streak. In order modeling the experiment with a 2D hydrodynamic simulations \[2\], we assumed an axial-symmetric approximation (double-rings spatial profile for the laser spot). Some results of experimental shock dynamics are in a good accordance with the theoretical and numerical predictions, but others demand for new models. The reasons are discussed in the report. A A is grateful to STSM visit grant in the framework of COST Action MP1208 “Developing the physics and the scientific community for inertial fusion” for support.

\[1\] Aliverdiev A A, Batani D, Amirova A A \textit{et al} 2015 \textit{Nukleonika} 60 213–219
\[2\] Aliverdiev A, Batani D, Antonelli L \textit{et al} 2014 \textit{Phys. Rev. E} 89 053101