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Compression of matter by hyperspherical shock waves MASAKATSU MURAKAMI, Institute of Laser Engineering, Osaka University, YUKIHARU IWAMOTO, Graduate School of Science and Engineering, Ehime University, JAVIER SANZ, ETSI Aeronauticos, Universidad Politecnica de Madrid — A novel compression scheme is proposed, in which hollow targets with specifically curved structures initially filled with uniform matter, are driven by a converging shock waves. The self-similar dynamics are analyzed for converging and diverging shock waves. Owing to the geometrical accumulation, the shock-compressed densities and pressures are substantially higher than those achieved using spherical shocks. Two-dimensional hydrodynamic simulations are developed. A linear stability analysis for the spherical geometry reveals a dispersion relation with cut-off mode numbers that are a function of the specific heat ratio, above which eigenmode perturbations are smeared out in the converging phase.

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