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Self-Similar evolution of Richtmyer-Meshkov instability under re-shock conditions GUY MALAMUD, Physics Department, Nuclear Research Center Negev, Beer-Sheva 84190, Israel, ELI LEINOV, ASI FORMOZA, OREN SADOT, ARIE LEVIN, GABI BEN-DOR, Departments of Mechanical Engineering, Ben-Gurion University of the Negev, Beer-Sheva 84015, Israel, YONATAN ELBAZ, DOV SHVARTS, Physics Department, Nuclear Research Center Negev, Beer-Sheva 84190, Israel — The Richtmyer-Meshkov (RM) instability is of critical importance in inertial confinement fusion (ICF) and astrophysics. In the present work a systematic study has been made of the growth of the turbulent mixing zone (TMZ) under re-shock conditions. In this study, shock-tube experiments were done by Leinov et al. [1] changing the re-shock arrival time, by varying the shock-tube end wall distance, as well as the shock Mach number. Using 3D direct numerical simulations as well as 3D bubble-competition model [2], for various initial 3D conditions, it was found that the best agreement with the experimental results is achieved when the TMZ evolution is dominated by the self-similar behavior of the bubble size and amplitude distributions. The TMZ power law at the first and second shock was deducted from the experimental and numerical data and compared with the results of the bubble competition model. [1] E. Leinov et. al. JFM, 626, 449(2009). [2] U. Alon et. al. PRL 72, 2867 (1994); D. Oron et. al. PoP 8, 2883 (2001); D. Kartoon et. al. LPB 21, 327 (2003).

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