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On the Structure of Plasma Liners for Plasma Jet Induced Magneto Inertial Fusion LINGLING WU, ROMAN SAMULYAK, Stony Brook University — 3D simulations of the formation and evolution of plasma liners for the Plasma Jet Induced Magneto Inertial Fusion (PJMIF) have been performed. In the PJMIF concept, a plasma liner, formed by merging of a large number of radial, highly supersonic plasma jets, implodes on the target in the form of two compact plasma toroids, and compresses it to conditions of the nuclear fusion ignition. The propagation of a single jet with Mach number 60 from the plasma gun to the merging point was studied using the front tracking code FronTier. The simulation result was used as input to the jet merger problem. The merger of 144 jets and the formation and heating of plasma liner by oblique shock waves was studied and compared with recent theoretical predictions. The main result of the study is the prediction of the average Mach number reduction and the description of the liner structure and properties.

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