Highlights

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1. Develop a multi-material HLLC-type Riemann solver for 1D elastic-plastic (EP) flows.
2. MHLLCEP is more accurate than HLLCE in resolving plastic waves of Riemann problems.
3. Develop a high-order ghost-cell reconstruction method for 1D multi-material EP flows.
4. Develop a 3nd-order cell-centered WENO Lagrangian scheme based on MHLLCEP.
5. MHLLCEP works better than HLLCE for 1D multi-material EP flows.