Highlights

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1. Develop a Riemann solver of HLLC-type for 1D multi-material elastic-plastic flows.

2. Both the elastic and plastic waves are considered in the construction of the solver.

3. A ghost-cell method is built to eliminate the oscillations near the interface.

4. A high-order cell-centered Lagrangian scheme is constructed with a WENO scheme.

5. The MHLLCEP has good performance in multi-material simulating examples.