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Simulation of Embedded Electromagnetic Particle Velocity Gauge Package Response in Gas-Gun Experiments KATHERINE FINN, NICK WHITWORTH, CAROLINE HANDLEY, AWE — In recent years, a comprehensive suite of gas-gun particle velocity gauge experiments have been conducted by Gustavsen et al. A detailed analysis of this data has led to advances in the understanding of the shock to detonation transition in polymer bonded explosives, and hydrocode simulations of the experiments are often used to calibrate reactive-burn models. In these simulations, the gauges are often modeled using Lagrangian marker particles, with no physical representation. In contrast, the experimental gauge package, as developed by Vorthman et al. in the early 1980s, consists of etched aluminium sandwiched between two sheets of FEP Teflon, using an urethane-based glue. The resulting gauge package is approximately 60 micrometres thick and is positioned between two wedge-shaped pieces of explosive at an angle of 30 degrees, to form a right-circular cylinder. This paper investigates whether there is a need to include an accurate representation of the gauge package within future hydrocode simulations.

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