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C Chicone* (carmen@chicone.math.missouri.edu), Department of Mathematics, University of Missouri, Columbia, MO 65211. *The compressible fluid two-body problem*. Preliminary report.

Dynamical models for the motions associated with a fluid filled tube bounded by a piston at each end will be discussed. The key feature of interest is the finite propagation speed of the waves produced in the fluid by the motions of the pistons. Analysis of such models leads to an interplay between partial differential equations with ODE boundary conditions and initial value problems for functional differential equations; and, it is a fruitful source for new mathematical problems in dynamics. (Received July 25, 2007)