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Symmetries of the Gas Dynamics Equations Using the Differential Form Method JOE SCHMIDT, SCOTT RAMSEY, ROY BATY, Los Alamos National Laboratory — A brief review of the theory of exterior differential systems and isovector symmetry analysis methods is presented in the context of the one-dimensional inviscid compressible flow equations. These equations are formulated as an exterior differential system with equation of state (EOS) closure provided in terms of an adiabatic bulk modulus. The scaling symmetry generators and corresponding EOS constraints otherwise appearing in the existing literature are recovered through the application of and invariance under Lie derivative dragging operations.

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