Abstract Submitted
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A Numerical Method for DNS/LES of Compressible Reacting Flows[1] JEFF DOOM, KRISHNAN MAHESH, University of Minnesota — A non-dissipative, implicit, all Mach number algorithm for direct numerical and large eddy simulation of compressible reacting flows, is described. The compressible Navier-Stokes equations are rescaled so that the zero Mach number reacting equations are discretely recovered in the limit of zero Mach number. The dependent variables are co–located in space, and thermodynamic variables are staggered from velocity in time. The algorithm discretely conserves kinetic energy in the incompressible, inviscid, non–reacting limit. The species equations are implicit to allow for stiff chemical mechanisms, and are readily applied to complex chemistry. Numerical examples ranging from one–step chemistry to a nine species, nineteen reaction mechanism for H2 and O2 (Mueller et al, *Int. J. Chem. Kinet.* 1999) will be shown.

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