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Ann S Almgren* (asalmgren@lbl.gov), MS 50A-1148, 1 Cyclotron Rd, LBNL, Berkeley, CA 94549, and **John B Bell, Andy J Nonaka** and **Mike Zingale**. *Low Mach Number Modeling of Type Ia Supernovae*. Preliminary report.

Low Mach number methods provide an accurate and efficient way to numerically simulate low-speed flows in which acoustic wave propagation is not physically significant. In low Mach number methods one assumes a background state relative to which the variation in pressure must be small. Successful applications of these types of methods include low-speed combustion with a constant pressure background state, flows in the Earth's atmosphere with a hydrostatically stratified but constant-in-time background state, and a limited class of astrophysical flows for which the variations in temperature are small and the background state unchanging. Recently we have extended the low Mach number approach to a much more general class of astrophysical flows, now allowing large variations of temperature relative to the base state, and allowing the background state to evolve in time. In this talk I will describe how to derive the correct low Mach number equations for the convective phase of a Type Ia supernova, and will show a brief movie of our results so far. (Received September 16, 2008)