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Progress With the Velocity and Density Measurements in High Atwood Number Rayleigh-Taylor Mixing ARINDAM BANERJEE, MALCOLM J. ANDREWS, Texas A&M University — A statistically steady gas channel experiment is used to study the non-equilibrium development of high Atwood number Rayleigh-Taylor mixing. Two gas streams, one containing air-helium mixture and the other air, flow parallel to each other separated by a thin splitter plate. The streams meet at the end of a splitter plate leading to the formation of an unstable interface and initiation of buoyancy driven mixing. This set up is statistically steady in space and allows for long data collection times. Here, we describe initial validation work to measure the self similar evolution of mixing at density differences (At $\sim$ 0.05). In addition we also present velocity and density measurements at density differences of At $\sim$ 0.25. The facility is being currently used for studying the evolution of the mix at large density differences up to At $\sim$ 0.75. Diagnostics include a Constant Temperature (CT) as well as a Constant current (CC) Hot Wire anemometer and a high resolution digital image analysis. Analysis of measured data is used to explain the structure of mixing as it develops to a self-similar regime. The purpose of this paper is to describe the progress made in the High Atwood number facility and present the initial validation results as well as density and velocity measurements using the diagnostics described above.

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