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Time of Flight measurement of stopping cross sections for low energy light ions in H2, He, N2, and Ne gas[1] DAVID JEDREJCIC, UWE GREIFE, Colorado School of Mines — The majority of available data for the stopping cross section of light ions in light gases is concentrated in the medium and high energy regimes, with little or no data available at energies below 25 keV/u. This energy regime applies to the temperature range of many stellar cores, where fusion reactions between light nuclei are common. Knowledge of the stopping cross section for light ions which interact in this environment is crucial to the accurate modeling of stellar nucleosynthesis. The current work uses time-of-flight techniques to directly measure the stopping cross section of H2, He, N2 and Ne gas for H and He ions with energies between 15-22 keV. The gas target is isolated using differential pumping, bypassing the need for entrance and exit foils.

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