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High Pressure Equation of State of a Zirconium-Based Bulk Metallic Glass[1] MORGANA MARTIN, Georgia Tech, TOSHIMORI SEKINE, TAKAMICHI KOBAYASHI, National Institute for Materials Science, LASZLO KECSKES, Army Research Laboratory, NARESH THADHANI, Georgia Institute of Technology — The high pressure $U_s - U_p$ Hugoniot equation of state of $(Zr_{57}Nb_5Cu_{15.4}Ni_{12.6}Al_{10}$ bulk metallic glass (BMG) was determined using plate impact experiments. The National Institute for Materials Science (NIMS) two-stage light-gas gun was utilized for the high pressure measurements (∼26-115 GPa) and the Georgia Institute of Technology (GT) single-stage gas gun was utilized for the relatively low pressure measurements (∼5-23 GPa). NIMS experiments were instrumented with streak photography and the inclined mirror method to simultaneously measure shock velocity and free surface velocity. GT experiments utilized polyvinylidene fluoride (PVDF) stress gauges and velocity interferometry (VISAR) to simultaneously measure the shock velocity, free surface velocity and stress. Results from the streak camera records and PVDF gauges + VISAR traces, as well as impedance matching calculations, were used to generate the $U_s - U_p$ Hugoniot equation of state data and determine the high pressure stability of the BMG.

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