Characterizing Performance of Broadband Laser Ranging[1]

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Broadband Laser Ranging (BLR) has been developed as a surface position diagnostic for non-planar shock experiments that is complementary and compatible with Photonic Doppler Velocimetry (PDV). BLR uses very short broadband laser pulses to make relative time-of-flight measurements to a moving surface and a fixed reference surface. Recording an amplified dispersive Fourier transform of the reflected pulses enables very accurate relative position measurements at a high repetition rate. Several experiments have been conducted aiming to understand the capabilities of this new diagnostic tool. The accuracy and precision of the instrument will be explored along with some interesting and unexpected systematic effects from hardware physics.