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Recent Advances in All Fiber Doppler Velocimeter at LSD. XIANG WANG, JIDONG WENG, HUA TAN, YUN MA, XIANMIN ZHOU, LABORATORY FOR SHOCK WAVE AND DETONATION PHYSICS RESEARCH TEAM[1] — At LSD, we have developed series novel Interferometers and using these techniques to measure velocities up to several kilometers-per-second on different types of shock experiments for the past three years. These Interferometers possess of a very simple structure, which we called the All Fiber Velocimeter (AFV) and consist of some commercially available products developed for the communications industry. We use a fiber laser and single mode fibers to deliver light to and from the target. The return Doppler-shifted light is mixed with the original laser light to generate a beat frequency proportional to the moving velocity. The beat signals were recorded directly onto fast digitized scope. Compared with traditional Optical Velocity Interferometer, such as VISAR or F-P, the AFV have more compact, reliable and less cost. This paper describes our applications to measuring velocities in shock or detonation experiments and presents recent data obtained with the AFV.

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