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1550nm Fiber Optic TOAD Time Of Arrival Diagnostic for measuring sub-nanosecond resolution of detonation break out MICHAEL SHINAS, DEAN DOTY, Los Alamos National Laboratory — We report on the design and testing of an eight-channel 1550 nm TOAD system that we have shown to resolve the arrival of a detonation wave front on explosive dynamic experiments with a timing resolution of <250ps. The TOAD probe consists of a 1550 nm single mode optical fiber, which is mounted, in a flat polished ferrule. The exposed optical fiber is coated with 1000 angstroms of aluminium. We have demonstrated that the TOAD system can measure detonation arrival times on metal or bare high explosives. By omitting the 1000 angstroms of aluminium on the end of the single mode optical fiber the 1550 nm TOAD system can be converted into a very simple PDV (Photon Doppler Velocimetry) diagnostic.

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