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Progress made on measuring the temperature of four different detonating explosives. JAMES FERGUSON, JAMES RICHLEY, BEN SUTTON, SIMON FINNEGAN, MIKE GOFF, DAN THOMAS, Atomic Weapons Establishment — We report on progress made in the measuring of the temperature of different detonating explosives using pyrometry. These measurements were made on four different types of PBX; HMX based, TATB based, RDX based and a TNT-HMX mix. Additionally, spectroscopy measurements were performed on an HMX based explosive in different geometries. The explosive geometries used for these measurements were cylinder tests, rate sticks and plate impact gas gun experiments. The measurements themselves have been taken both end on to the approaching detonation wave and tangentially as the detonation wave sweeps past. The gas gun experiments investigated partially reacted states rather than full detonation. The measured temperatures from all four explosive types are compared with maximum temperatures ranging from 3500 k to 4500 k.

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