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Common Problems with Pyrometry at Shock Physics Experiments and How to Avoid Them ACHIM SEIFTER, ANDREW OBST, DAVID HOLTKAMP, Los Alamos National Laboratory — Temperature is not only one of the most prominent parameters in shock physics experiments but also very hard to determine experimentally. Only a few techniques are available because of difficulties due to the short timescale and often very low temperatures. Pyrometry is the most portable of these techniques but has to deal with some problems which give rise to uncertainties. Only if the experiment is designed very carefully some of these difficulties like background radiation from high explosive burn products, muzzle flash or laser light can be avoided. Other problems like spatial temperature non-uniformities or thermal radiation from a transparent anvil are inherent to the experiment and cannot be avoided. By choosing the proper spectral range covered by the pyrometer and fitting the obtained spectral radiance traces with appropriate models meaningful results can be obtained. In this paper we will describe the most important points to be taken into account when designing the experiment, present considerations for choosing the wavelength range of the pyrometer and show data where spatial non-uniformities or radiation from hot anvils occurred and temperature data could still be obtained.

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