

Abstract Submitted
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Validation of a multitechnicals device aimed to reach the temperature of a material under shock loading BRUNO LEGRAND, Commissariat à l'Energie Atomique (CEA) — The temperature is one of the parameters which occurs in the equations of state, to describe the behaviour of materials submitted to an intense shock (tens of GPa). Our laboratories use a multispectral pyrometer to determine the temperature. This kind of diagnostic is well known on simple experimental set-up, but it allows to obtain only one temperature measurement. The aim of this work is to validate a device able to integrate 2 simultaneous measurements of temperature, coupled with chronometry and velocity measurements, to improve our knowledge of the behaviour and of the temperature of a material under shock loading. It was necessary to resize and to characterize the existing diagnostics and taking into account the duration of the phenomena (700 ns), as well as mechanical and luminous disturbances generated by the shock. The true temperature of the shocked material is obtained from a luminance measurement with short wavelength. So the pyrometer was reconfigured. This assembly was validated on bismuth samples. The results obtained enable to consider new prospects, like the addition of a reflectivity measurement, in order to reduce uncertainty on the temperature.

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