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Characterising Argon-bomb balloons for High-speed Photography

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Abstract

A method to optimise the geometry, explosive charge mass and volume of an argon bomb for specific lighting requirements has been proposed. The method is specifically aimed at applications that require photographic diagnostics with ultra-high speed cameras (200 000 frames per second and higher) and combines the use of low cost light sensors in combination with the output of the high speed camera, to characterise the light output from the argon bombs. The method is illustrated in this paper for argon balloons of different geometries with PE4 explosive charges of L/D = 0.5 and mass between 0.01kg and 1kg.