



QUANTITATIVE VISUALIZATION OF EXPLOSION USING BACKGROUND ORIENTED SCHLIEREN METHOD

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KEYWORDS:

Main subjects: flow visualization

Fluid: gas

Visualization method(s): Background-oriented schlieren

Other keywords: computed tomography, Abel transform

ABSTRACT: This paper describes three-dimensional visualization of explosion generated by small-amount of explosive. The visualization method used was background-oriented schlieren (BOS) method¹ with multiple high-speed cameras with synchronization. The explosive used was a PETN pellet with a mass of 1.42 g. The explosive was ignited with a detonation. The shock wave was visualized from each 30 degree. Visualized images were processed by algorithm to reconstruct three-dimensional density distribution inside the shock front. The resultant reconstructed density distribution was compared with the result provided by numerical analysis. As a result, development of shock front of the reconstructed image agreed with numerical one. While, density profile inside the shock front was not with fine accuracy.

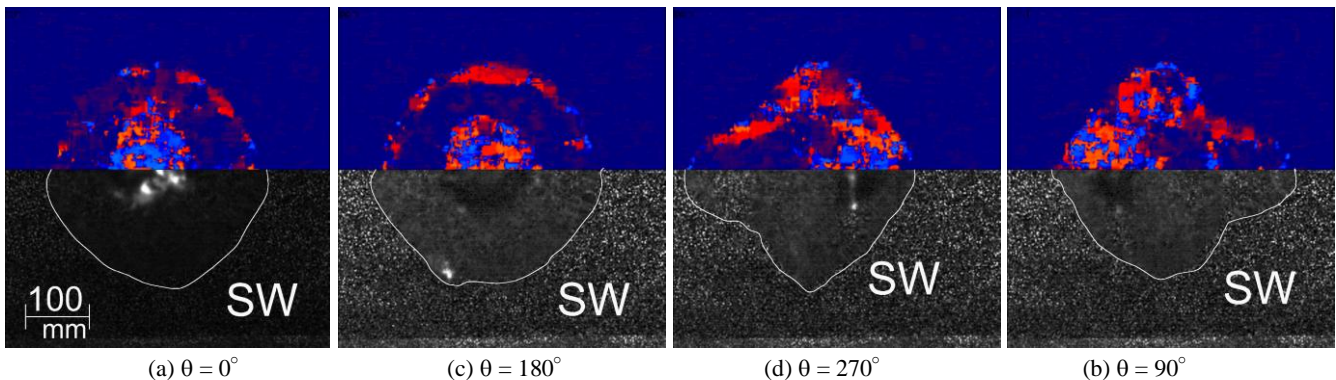


Fig. Flow visualization of explosion using Background Oriented Schlieren method.

References

1. L. Venkatakrishnan, G.E.A. Meier. *Density measurements using the background oriented schlieren technique*. Experiments in Fluids, Vol. 37, No. 2, pp. 237–247, 2004.