

NASA SBIR/STTR Technologies

A Novel, Portable, Projection, Focusing Schlieren System

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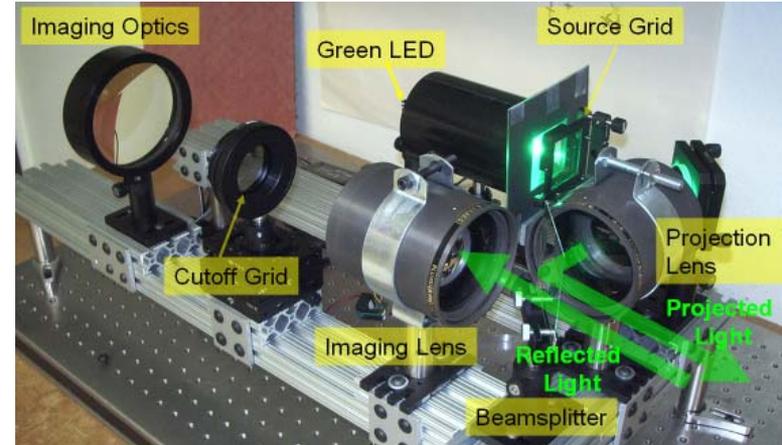


Identification and Significance of Innovation

We propose to develop a novel type of schlieren camera system that is more portable, easier to align, and more versatile than existing systems. The system projects a background grid upon a reflective screen, and an image of the background grid is focused on a cutoff grid to produce the schlieren effect.

Alignment between the screen and the camera is not critical, which simplifies the setup.

Estimated TRL (1 – 9) at beginning and end of contract: 4, 5



Projection Focusing Schlieren System

Technical Objectives and Work Plan

The objective of this project is to develop a digital, projected-grating, focused schlieren method for applications in wind tunnels of interest to NASA. The fundamental concept has already been proven in preliminary laboratory experiments. This research must now develop the concept into a practical tool for NASA and to determine its limitations. The resulting system will be a portable, versatile, high-speed schlieren system that can be easily set up and aligned in a short time.

The work plan consists of designing the optical system, building a breadboard, and laboratory experiments with high-speed imaging.

NASA and Non-NASA Applications

Applications exist in all forms of research and development associated with flow fields where schlieren viewing could be useful, including aero-optics, flow control, drag, boundary layer transition, and flow separation. The proposed developments could be extremely important in enhancing ground test facility capability. Potential commercial applications include flow diagnostics of heating and ventilations systems.

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NON-PROPRIETARY DATA