1) Physics and Measurement of Aero-Optical Effects: Past and Present [19]

- The United States had two periods of funding, both associated with the development of high-speed (transonic) airborne laser systems.
- Optical turbulence is defined as density fluctuations in the air due to atmospheric turbulence and temperature gradients.
- In order to study aero-optical effects, one needs to measure the aberrated wave fronts imposed on a otherwise planar wave front for a large-aperture laser projected through aero-optical turbulence.
- The measurement of the aberrations is a direct result of the air's unsteady density field in the flow given that the air's index of refraction is directly linked to the fluctuating density through the Gladstone-Dale relationship.

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