

**LIQUID-CRYSTAL THERMOGRAPHY METHOD FOR THE STUDY OF STAGES
OF INSTABILITY DEVELOPING IN THE CROSS FLOW ON THE LEADING EDGE OF THE
OBLIQUE WING**

S.N. Tolkachev, V.N. Gorev, V.V. Kozlov

***Khristianovich Institute of Theoretical and Applied Mechanics SB RAS,
630090 Novosibirsk, Russia***

Key words: oblique wing, cross-flow instability, leading edge, visualization, liquid-crystal thermography, roughness, turbulence, streamwise vortices

The investigations on the oblique wing leading edge are difficult because of its curvilinear shape. In this work the liquid crystal thermography technique was chosen because it allows receiving the information from the area of the surface and tracing the stationary disturbance evolution from the roughness element to the streamwise direction.

The liquid crystal thermography technique was tested for the investigation of stages of stationary disturbance developing after the roughness element and for indication of turbulence on the swept wing leading edge. It was shown, that stationary disturbance is easy to excite by the roughness element, develops along the streamline. The stationary mode behavior dependence from the roughness element size was investigated. It was determined, that the turbulence doesn't develop along the leading edge in the explored speed range.

This experimental work is of great importance for understanding the processes of stationary disturbance formation and evolution in the leading edge boundary layer of the oblique wing.