

Another confusing word about vortex is the 'induced velocity'. In some paper the author, after establishing the existence of a vortex, states some flow is induced by the vortex. The question is: Is the induced flow field a part of vortex or passively induced by the vortex which is a different source of energy? I think we should avoid the use of induced velocity in describing experimental results.

At present it seems to be impossible to find completely objective and unambiguous expression for patterns in the turbulent flow.

VI CONCLUDING REMARKS

In order to promote the investigations on patterns in the turbulent flow I should like to make following suggestions:

- 1 To increase the number of point-measuring probes — such as hot wires and laser Dopplers — and try to acquire field informations.
- 2 To improve techniques of visualization of flow field and obtain quantitative and objective informations.
- 3 To understand that we can obtain any kind of pattern from random field.
- 4 To develop ways of expressing complicated patterns and establish the scale of values on various patterns.

LAMINAR-TURBULENCE TRANSITION: THE INTERMITTENCY REVISITED

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The flow during transition from the laminar to a turbulent state in a boundary layer is best described through the distribution of the intermittency γ . In constant pressure, two-dimensional flow turbulent spots appear to propagate linearly; the hypothesis of concentrated breakdown, together with Emmon's theory, leads to an adequate model for the intermittency distribution, over flow regimes ranging all the way from low speeds to hypersonic. However, when the pressure gradient is not zero, or when the flow is not two-dimensional, spot propagation characteristics are more complicated. Experimental results in such situations, and possible models, will be reviewed and discussed.