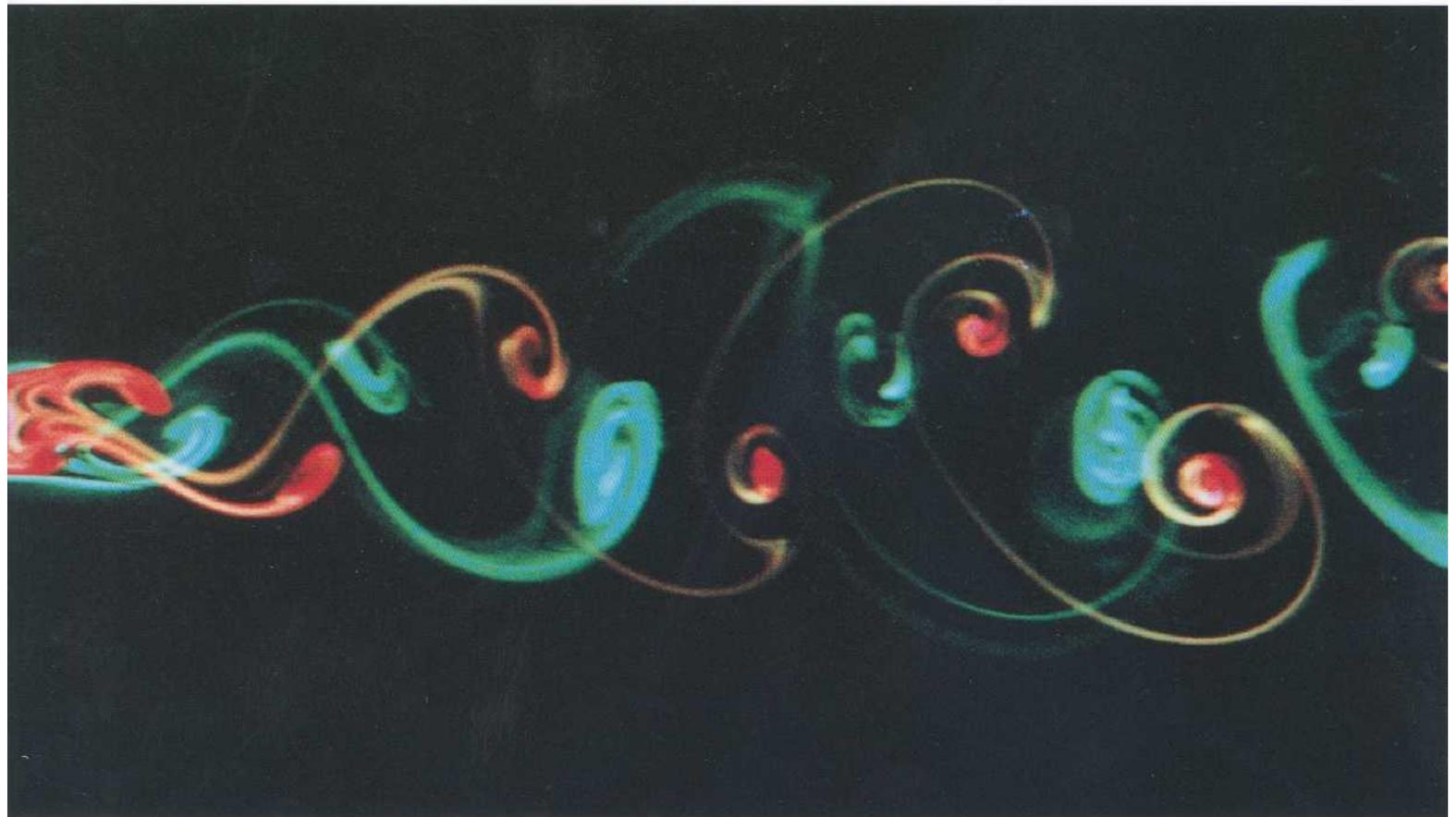


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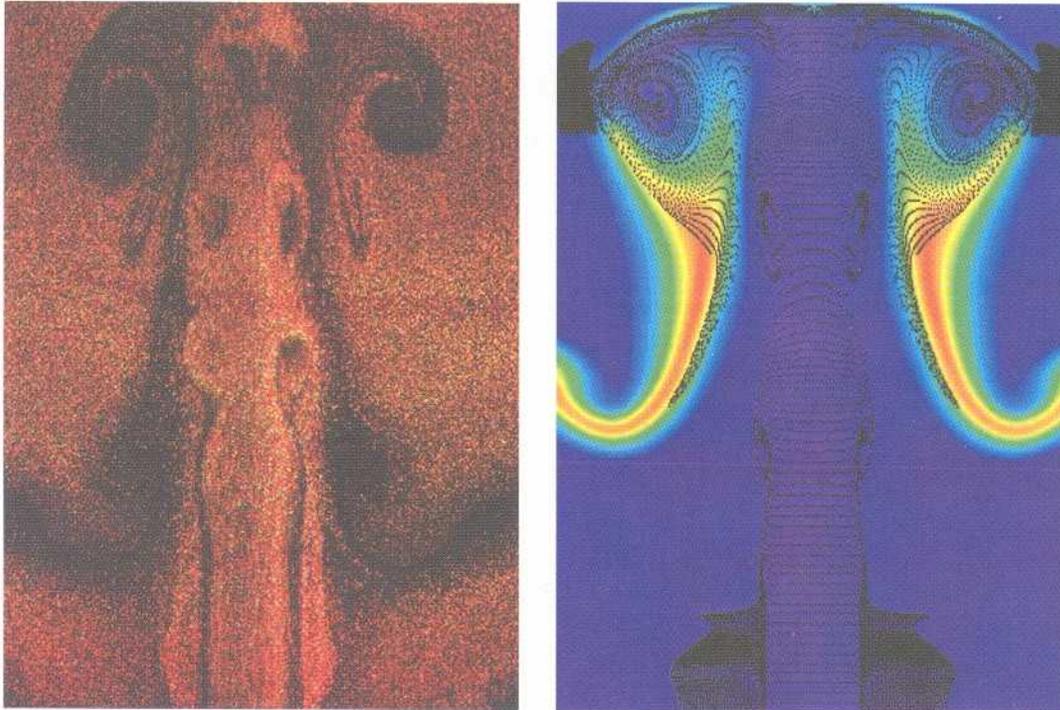
## 2. Modeling and Measurement of the Interaction of Starting Jets and Flames

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**Explanatory Note:** Images of laser-light scattering from particles seeded into an opposed-jet burner were used to develop an improved model of reacting flows. A two-dimensional, time-dependent solution of the Navier-Stokes equations with chemical reactions was implemented to model multiple-vortex interactions produced by starting jets that penetrate a nonpremixed hydrogen-air flame as the lead vortex impacts the upper nozzle. The modeling image of temperature and superimposed instantaneous particle locations (right) and the scattering image (left) reveal multiple vortices. Formation of these vortices and the resulting interactions are important events during the transition to turbulence. The model is being modified to include three-dimensional instabilities that form during this transition in the presence of flames.