



## Measurements with a Split-Fiber Probe in Complex Unsteady Flows (Paperback)

By Jan Lepicovsky

Bibliogov, United States, 2013. Paperback. Condition: New. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.A split-fiber probe was used to acquire unsteady data in a research compressor. A calibration method was devised for a split-fiber probe, and a new algorithm was developed to decompose split-fiber probe signals into velocity magnitude and direction. The algorithm is based on the minimum value of a merit function that is built over the entire range of flow velocities for which the probe was calibrated. The split-fiber probe performance and signal decomposition was first verified in a free-jet facility by comparing the data from three thermo-anemometric probes, namely a single-wire, a single-fiber, and the split-fiber probe. All three probes performed extremely well as far as the velocity magnitude was concerned. However, there are differences in the peak values of measured velocity unsteadiness in the jet shear layer. The single-wire probe indicates the highest unsteadiness level, followed closely by the split-fiber probe. The single-fiber probe indicates a noticeably lower level of velocity unsteadiness. Experiments in the NASA Low Speed Axial Compressor facility revealed similar results. The mean velocities agreed well, and differences in the velocity unsteadiness are similar to the case of a...

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