

CONTENTS

CONTRIBUTORS	vii
FOREWORD.....	ix
PREFACE.....	xi
CONTENTS OF VOLUME 18, PART B	xiii
CONTRIBUTORS TO VOLUME 18, PART B	xvii
LIST OF VOLUMES IN TREATISE	xix

1. Measurement of Velocity

1.1. Tracer Methods	1
by E. F. C. SOMERSCALES	
List of Symbols	1
1.1.1. Introduction	2
1.1.2. Flow Tracing Particles	6
1.1.3. Chronophotography.....	64
1.1.4. Laser Doppler Velocimeter*	93
1.2. Probe Methods for Velocity Measurement.....	240
1.2.1. Introduction	240
by R. J. EMRICH	
1.2.2. Velocity Measurement by Pitot Probe.....	242
by R. J. EMRICH	
1.2.3. Propeller and Vane Anemometers	254
by R. J. EMRICH	
1.2.4. Hot-Wire and Hot-Film Anemometers	259
by RON F. BLACKWELDER	
1.2.5. Velocity Measurement by Other Probes.....	315
by R. J. EMRICH	
1.2.6. Flowmeters	321
by R. J. EMRICH	

* Section 1.1.4.5, "Fabry-Perot Spectrometer," is by A. N. Papyrin and R. I. Soloukhin.

1.3. Measurement of Velocity by Analysis of Doppler Shift of Characteristic Radiation	341
by R. J. EMRICH	
1.3.1. Doppler Shift Formulas	342
1.3.2. Method of Measurement of Doppler Shift	343
2. Density Sensitive Flow Visualization by W. MERZKIRCH	
2.1. Introduction	345
2.2. Refractive Behavior of Fluids	346
2.2.1. Relation between Fluid Density and Refractive Index	346
2.2.2. Deflection and Retardation of Light in a Density Field	352
2.3. Visualization by Means of Light Deflection	356
2.3.1. Shadowgraph Method	356
2.3.2. Schlieren Systems	361
2.3.3. Fringe Distortion Methods	369
2.4. Interferometry	374
2.4.1. Reference Beam Interferometers	376
2.4.2. Shearing Interferometers	383
2.4.3. Phase Contrast and Field Absorption	389
2.5. Evaluation Procedures	392
2.5.1. Axisymmetric Fields	393
2.5.2. Three-Dimensional Fields	396
2.6. Radiation Emission	398
2.6.1. Electron Beam Flow Visualization	399
2.6.2. Glow Discharge	402
AUTHOR INDEX	1
SUBJECT INDEX	13

