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Nota di contenuto	Contents ; Preface ; Part I Review Chapters ; Chapter 1 Quantitative Imaging Techniques and Their Application to Wavy Flows ; 1. Introduction ; 2. Quantitative Imaging Techniques ; 3. PIV - A General Overview ; 4. PIV - The Fundamentals ; 5. PTV 6. Higher Order Measurements from Velocity Fields Obtained by QI- Techniques 7. Conclusion ; Chapter 2 PIV Measurements in the Bottom Boundary Layer of the Coastal Ocean ; 1. Introduction ; 2. Development of the Submersible PIV System ; 3. Deployments 4. Analysis Techniques and Sample Results 5. Conclusions ; Chapter 3 Water Wave Induced Boundary Layer Flows Above a Ripple Bed ; 1. Introduction ; 2. Experimental Set-Up and Procedures ; 3. Experimental Results and Discussions ; 4. Concluding Remarks ; Chapter 4 Ship Velocity

Fields

1. Introduction ; 2. Overview of PIV techniques ; 3. Recent advances in PIV techniques ; 4.

PIV data post processing and uncertainty assessment

; 5. Application of PIV in ship velocity fields

; 6. Conclusions and future directions

Chapter 5 The Air-Water Interface: Turbulence and Scalar Exchange

1. Introduction ; 2. Scalar Exchange Models

; 3. Unsheared Air-Water Interface ; 4. Sheared

Air-Water Interface ; 5. Calculation of Gas

Transfer Coefficients During Low and Moderate Wind Speeds

; 6. Conclusions

Chapter 6 Internal Wave Fields Analyzed by Imaging Velocimetry

Sommario/riassunto

This volume introduces particle image velocimetry (PIV), a technique for water wave measurement in the laboratory and in the open ocean. It discusses the turbulent dissipation, Reynolds stresses and vortical structures in boundary layers of the sea bed, as well as ships, ship wakes, propulsion hydrodynamics, cavitation and free surface waves. Upwelling behind crests of micro-breaking ocean surface waves (important for the exchange of greenhouse gases between air and water) and large amplitude internal solitons in the ocean are measured. The book includes velocities and accelerations in breaki