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| 1. Record Nr.           | UNINA9910465109703321                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Autore                  | Rathakrishnan Ethirajan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Titolo                  | Theoretical aerodynamics [[electronic resource]] / Ethirajan Rathakrishnan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Pubbl/distr/stampa      | Singapore, : Wiley, c2013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| ISBN                    | 1-118-47935-1<br>1-118-47937-8<br>1-299-31594-1<br>1-118-47936-X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Descrizione fisica      | 1 online resource (561 p.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Disciplina              | 629.132/3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Soggetti                | Aerodynamics<br>Electronic books.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Lingua di pubblicazione | Inglese                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Formato                 | Materiale a stampa                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Livello bibliografico   | Monografia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Note generali           | Description based upon print version of record.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Nota di bibliografia    | Includes bibliographical references at the end of each chapters and index.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Nota di contenuto       | Theoretical Aerodynamics; Contents; About the Author; Preface; 1 Basics; 1.1 Introduction; 1.2 Lift and Drag; 1.3 Monoplane Aircraft; 1.3.1 Types of Monoplane; 1.4 Biplane; 1.4.1 Advantages and Disadvantages; 1.5 Triplane; 1.5.1 Chord of a Profile; 1.5.2 Chord of an Aerofoil; 1.6 Aspect Ratio; 1.7 Camber; 1.8 Incidence; 1.9 Aerodynamic Force; 1.10 Scale Effect; 1.11 Force and Moment Coefficients; 1.12 The Boundary Layer; 1.13 Summary; Exercise Problems; Reference; 2 Essence of Fluid Mechanics; 2.1 Introduction; 2.2 Properties of Fluids; 2.2.1 Pressure; 2.2.2 Temperature; 2.2.3 Density<br>2.2.4 Viscosity2.2.5 Absolute Coefficient of Viscosity; 2.2.6 Kinematic Viscosity Coefficient; 2.2.7 Thermal Conductivity of Air; 2.2.8 Compressibility; 2.3 Thermodynamic Properties; 2.3.1 Specific Heat; 2.3.2 The Ratio of Specific Heats; 2.4 Surface Tension; 2.5 Analysis of Fluid Flow; 2.5.1 Local and Material Rates of Change; 2.5.2 Graphical Description of Fluid Motion; 2.6 Basic and Subsidiary Laws; 2.6.1 System and Control Volume; 2.6.2 Integral and Differential Analysis; 2.6.3 State Equation; 2.7 Kinematics of Fluid Flow; 2.7.1 Boundary Layer Thickness; 2.7.2 Displacement Thickness |

2.7.3 Transition Point; 2.7.4 Separation Point; 2.7.5 Rotational and Irrotational Motion; 2.8 Streamlines; 2.8.1 Relationship between Stream Function and Velocity Potential; 2.9 Potential Flow; 2.9.1 Two-dimensional Source and Sink; 2.9.2 Simple Vortex; 2.9.3 Source-Sink Pair; 2.9.4 Doublet; 2.10 Combination of Simple Flows; 2.10.1 Flow Past a Half-Body; 2.11 Flow Past a Circular Cylinder without Circulation; 2.11.1 Flow Past a Circular Cylinder with Circulation; 2.12 Viscous Flows; 2.12.1 Drag of Bodies; 2.12.2 Turbulence; 2.12.3 Flow through Pipes; 2.13 Compressible Flows; 2.13.1 Perfect Gas; 2.13.2 Velocity of Sound; 2.13.3 Mach Number; 2.13.4 Flow with Area Change; 2.13.5 Normal Shock Relations; 2.13.6 Oblique Shock Relations; 2.13.7 Flow with Friction; 2.13.8 Flow with Simple T0-Change; 2.14 Summary; Exercise Problems; References; 3 Conformal Transformation; 3.1 Introduction; 3.2 Basic Principles; 3.2.1 Length Ratios between the Corresponding Elements in the Physical and Transformed Planes; 3.2.2 Velocity Ratios between the Corresponding Elements in the Physical and Transformed Planes; 3.2.3 Singularities; 3.3 Complex Numbers; 3.3.1 Differentiation of a Complex Function; 3.4 Summary; Exercise Problems; 4 Transformation of Flow Pattern; 4.1 Introduction; 4.2 Methods for Performing Transformation; 4.2.1 By Analytical Means; 4.3 Examples of Simple Transformation; 4.4 Kutta-Joukowski Transformation; 4.5 Transformation of Circle to Straight Line; 4.6 Transformation of Circle to Ellipse; 4.7 Transformation of Circle to Symmetrical Aerofoil; 4.7.1 Thickness to Chord Ratio of Symmetrical Aerofoil; 4.7.2 Shape of the Trailing Edge; 4.8 Transformation of a Circle to a Cambered Aerofoil; 4.8.1 Thickness-to-Chord Ratio of the Cambered Aerofoil; 4.8.2 Camber; 4.9 Transformation of Circle to Circular Arc

## Sommario/riassunto

Theoretical Aerodynamics is a user-friendly text for a full course on theoretical aerodynamics. The author systematically introduces aerofoil theory, its design features and performance aspects, beginning with the basics required, and then gradually proceeding to higher level. The mathematics involved is presented so that it can be followed comfortably, even by those who are not strong in mathematics. The examples are designed to fix the theory studied in an effective manner. Throughout

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| 2. Record Nr.           | UNINA9910465829603321                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Autore                  | Latash Mark L. <1953->                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Titolo                  | Synergy [[electronic resource] /] / Mark L. Latash                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Pubbl/distr/stampa      | Oxford ; ; New York, : Oxford University Press, 2008                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| ISBN                    | 9786611769680<br>0-19-971556-4<br>1-281-76968-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Descrizione fisica      | 1 online resource (429 p.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Disciplina              | 612.7/6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Soggetti                | Human mechanics<br>Biomechanics<br>Electronic books.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Lingua di pubblicazione | Inglese                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Formato                 | Materiale a stampa                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Livello bibliografico   | Monografia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Note generali           | Description based upon print version of record.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Nota di bibliografia    | Includes bibliographical references (p. 363-403) and index.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Nota di contenuto       | Contents; Part 1: Building a Definition for Synergy; 1.1 Synergies and Non-Synergies: A Few Examples; 1.2 Palama's Concept of Synergy; 1.3 Inanimate "Synergies": The Table and the Rusty Bucket; 1.4 Examples of Biological Synergies; 1.5 The Definition: Three Components of a Synergy; Part 2: A Brief History of Movement Studies; 2.1 Ancient Greece and Rome; 2.2 Renaissance; 2.3 The Century of Frogs, Photography, and Amazing Guesses; 2.4 The Twentieth Century: Wars of Ideas; 2.5 Nikolai Alexandrovich Bernstein and Movement Science in the Soviet Union<br>2.6 History of Synergies and the Problem of Motor Redundancy2.7 Problems with Studying Biological Movement; Part 3: Motor Control and Coordination; 3.1 Israel Gelfand and Michael Tsetlin; 3.2 Structural Units and the Principle of Minimal Interaction; 3.3 Motor Control: Programs and Internal Models; Digression #1. The Muscle: Slow and Visco-Elastic; Digression #2. Neural Pathways: Long and Slow; Digression #3. Sensors: Confusing and Unreliable; Digression #4. Adaptation to Force Fields and After-Effects; Digression #5. Brain Imaging Techniques: What Do They Image?<br>3.4 The Equilibrium-Point Hypothesis3.4.1 Experimental Foundations of the Equilibrium-Point Hypothesis; Digression #6. Reflexes and |

Nonreflexes; 3.4.2 Equilibrium-Point Control of Simple Systems; 3.4.3 Three Basic Trajectories within the Equilibrium-Point Hypothesis; 3.4.4 Equilibrium-Point Control of Multi-Muscle Systems; 3.4.5 The Mass-Spring Analogy and Other Misconceptions; Part 4: Motor Variability: A Window into Synergies; 4.1 The Uncontrolled Manifold Hypothesis; 4.2 Modes as Elemental Variables; 4.2.1 Force Modes; Digression #7: Digit Interaction and Its Indices; 4.2.2 Muscle Modes  
 Digression #8: Electromyography 4.2.3 Experimental Identification of the Jacobian; 4.3 Stability, Variability, and Within-a-Trial Analysis of Synergies; 4.4 Other Computational Tools to Study Synergies; 4.4.1 Principal Component Analysis and Uncontrolled Manifold; 4.4.2 Analysis of Surrogate Data Sets; 4.5 Timing Synergies: Do They Exist?; Part 5: Zoo of Motor Synergies; 5.1 Kinematic Synergies; 5.1.1 Postural Synergies in Standing; 5.1.2 Sit-to-Stand Task; 5.1.3 Reaching; Digression # 9: Optimization; 5.1.4 Reaching in a Changing Force Field; 5.1.5 Multi-Joint Pointing  
 5.1.6 Quick-Draw Pistol Shooting 5.2 Kinetic Synergies; 5.3 Multi-Digit Synergies; 5.3.1 Force and Moment Stabilization during Multi-Finger Pressing; 5.3.2 The Role of Timing Errors; 5.3.3 Emergence and Disappearance of Synergies; 5.3.4 Anticipatory Synergy Adjustments and Purposeful Destabilization of Performance; 5.4 Prehensile Synergies; 5.4.1 Hierarchical Control of Prehension; 5.4.2 Principle of Superposition; 5.4.3 Adjustments of Synergies: Chain Effects; 5.4.4 Hierarchies of Synergies; 5.5 Multi-Muscle Synergies; 5.5.1 Anticipatory Postural Adjustments; 5.5.2 Making a Step  
 5.5.3 Multi-Muscle Synergies in Hand Force Production

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## Sommario/riassunto

Synergy discusses a general problem in biology: The lack of an adequate language for formulating biologically specific problems. Written for an inquisitive reader who is not necessarily a professional in the area of movement studies, this book describes the recent progress in the control and coordination of human movement. The book begins with a brief history of movement studies and reviews the current central controversies in the area of control of movements with an emphasis on the equilibrium-point hypothesis. An operational definition of synergy is introduced and a method of analysis of syn

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