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Nota di contenuto	Principles of the Dimensional Analysis -- Dimensional Analysis: Similarity and Self-Similarity -- Shock Wave and High Pressure Phenomena -- Similarity Methods for Nonlinear Problems -- Appendix A: Simple Harmonic Motion -- Appendix B: Pendulum Problem -- Appendix C: Similarity Solutions Methods for Partial Differential Equations (PDEs) -- Index.
Sommario/riassunto	Dimensional Analysis and Physical Similarity are well understood subjects, and the general concepts of dynamical similarity are explained in this book. Our exposition is essentially different from those available in the literature, although it follows the general ideas known as Pi Theorem. There are many excellent books that one can refer to; however, dimensional analysis goes beyond Pi theorem, which is also known as Buckingham’s Pi Theorem. Many techniques via self-

similar solutions can bound solutions to problems that seem intractable. A time-developing phenomenon is called self-similar if the spatial distributions of its properties at different points in time can be obtained from one another by a similarity transformation, and identifying one of the independent variables as time. However, this is where Dimensional Analysis goes beyond Pi Theorem into self-similarity, which has represented progress for researchers. In recent years there has been a surge of interest in self-similar solutions of the First and Second kind. Such solutions are not newly discovered; they have been identified and named by Zel'dovich, a famous Russian Mathematician in 1956. They have been used in the context of a variety of problems, such as shock waves in gas dynamics, and filtration through elasto-plastic materials. Self-Similarity has simplified computations and the representation of the properties of phenomena under investigation. It handles experimental data, reduces what would be a random cloud of empirical points to lie on a single curve or surface, and constructs procedures that are self-similar. Variables can be specifically chosen for the calculations.