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Soggetti	Mathematical physics Engineering mathematics Engineering - Data processing Chemometrics Mathematical Methods in Physics Mathematical and Computational Engineering Applications Mathematical Applications in Chemistry Mathematical Physics Theoretical, Mathematical and Computational Physics
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Nota di contenuto	Elements of linear algebra -- Complex numbers and functions -- Fourier series -- Special Functions -- Fourier Transform -- Laplace Transform -- Curvilinear coordinates -- Partial differential equations of mathematical physics -- Calculus of variations.
Sommario/riassunto	This textbook, the second in a series (the first covered fundamentals and basics), seeks to make its material accessible to physics students. Physics/engineering can be greatly enhanced by knowledge of advanced mathematical techniques, but the math-specific jargon and laborious proofs can be off-putting to students not well versed in abstract math. This book uses examples and proofs designed to be clear and convincing from the context of physics, as well as providing a large number of both solved and unsolved problems in each chapter. This is the second edition, and it has been significantly revised and enlarged, with Chapters 1 (on linear algebra) and 2 (on the calculus of

complex numbers and functions) having been particularly expanded. The enhanced topics throughout the book include: vector spaces, general (non-Hermitian, including normal and defective) matrices and their right/left eigenvectors/values, Jordan form, pseudoinverse, linear systems of differential equations, Gaussian elimination, fundamental theorem of algebra, convergence of a Fourie series and Gibbs-Wilbraham phenomenon, careful derivation of the Fourier integral and of the inverse Laplace transform. New material has been added on many physics topics meant to illustrate the maths, such as 3D rotation, properties of the free electron gas, van Hove singularities, and methods for both solving PDEs with a Fourier transform and calculating the width of a domain wall in a ferromagnet, to mention just a few. This textbook should prove invaluable to all of those with an interest in physics/engineering who have previously experienced difficulty processing the math involved. .