

## Libri Di Matematica Discreta

The Times Literary Supplement called their previous book, *Symmetry and the Beautiful Universe: [A] tour de force of physics made simple*. Quantum theory is the bedrock of contemporary physics and the basis of understanding matter in its tiniest dimensions and the vast universe as a whole. But for many, the theory remains an impenetrable enigma. Nobel Prize laureate Leon M. Lederman and Fermi lab theoretical physicist Christopher T. Hill seek to remedy this situation by both drawing on their scientific expertise and their talent for communicating science to the general reader. In this lucid, informative book, designed for the curious, they make the seemingly daunting subject of quantum physics accessible, appealing, and exciting. Their story is partly historical, covering the many Eureka moments when great scientists—Max Planck, Albert Einstein, Niels Bohr, Werner Heisenberg, Erwin Schrödinger, and others—struggled to come to grips with the bizarre realities that quantum research revealed. Although their findings were indisputably proven in experiments, they were so strange and counterintuitive that Einstein refused to accept quantum theory, despite its great success. The authors explain the many strange and even eerie aspects of quantum reality at the subatomic level, from particles that can be many places simultaneously and sometimes act more like waves, to the effect that a human can have on their movements by just observing them! Finally, Drs. Lederman and Hill delve into quantum physics' latest and perhaps most breathtaking offshoots—field theory and string theory. The intricacies and ramifications of these two theories will give the reader much to ponder. In addition, the authors describe the diverse applications of quantum theory in its almost countless forms of modern technology throughout the world. Using eloquent analogies and illustrative examples, *Quantum Physics for Poets* render even the most profound reaches of quantum theory understandable and something for us all to savor. Leon M. Lederman, Nobel Laureate (Batavia, IL), is Resident Scholar at the Illinois Mathematics and Science Academy, Director Emeritus of Fermi National Accelerator Laboratory, Pritzker Professor of Science at the Illinois Institute of Technology, the author of the highly acclaimed *The God Particle*, the editor of *Portraits of Great American Scientists*, and a contributor to *Science Literacy for the Twenty-First Century*. Dr. Lederman and coauthor Christopher T. Hill are also the coauthors of *Symmetry and the Beautiful Universe*. Christopher T. Hill, PhD (Batavia, IL), is chairman of the Department of Theoretical Physics and a theoretical physicist (Scientist III) at Fermi National Accelerator Laboratory.

Quantum mechanics, which describes the behavior of subatomic particles, seems to challenge common sense. Waves behave like particles; particles behave like waves. You can tell where a particle is, but not how fast it is moving—or vice versa. An electron faced with two tiny holes will travel through both at the same time, rather than one or the other. And then there is the enigma of creation ex nihilo, in which small particles appear with their so-called antiparticles, only to disappear the next instant in a tiny puff of energy. Since its inception, physicists and philosophers have struggled to work out the meaning of quantum mechanics. Some, like Niels Bohr, have responded to quantum mechanics' mysteries by replacing notions of position and velocity with probabilities. Others, like Einstein and Penrose, have disagreed and think that the entire puzzle reflects not a fundamental principle of nature but our own ignorance of basic scientific processes. *Sneaking a Look at God's Cards* offers the general reader a deep and real understanding of the problems inherent to the interpretation of quantum mechanics, from its inception to the present. The book presents a balanced overview of current debates and explores how the theory of quantum mechanics plays itself out in the real world. Written from the perspective of a leading European physicist, it looks extensively at ideas from both sides of the Atlantic and also considers what philosophers have contributed to the scientific discussion of this field. *Sneaking a Look at God's Cards* sets out what we know about the endlessly fascinating quantum world, how we came to this understanding, where we disagree, and where we are heading in our quest to comprehend the seemingly incomprehensible.

Qualsiasi corso universitario di matematica che contenga anche i primi elementi di calcolo infinitesimale (si chiami “Analisi matematica I”, “Matematica A”, “Istituzioni di Matematiche”, o in qualsiasi altro modo), contiene al suo interno una marcia di avvicinamento, tradizionalmente piuttosto lunga, in cui si inducono il linguaggio, gli strumenti, gli oggetti, che si utilizzano in seguito; parallelamente, spesso nelle esercitazioni, si richiamano e consolidano le proprietà delle funzioni elementari (esponenziali, logaritmi, funzioni trigonometriche e loro inverse...). Il confine tra i contenuti “nuovi” di queste parti introduttive e i cosiddetti “prerequisiti” è spesso sfumato, e in realtà lo studente deve, al tempo stesso, richiamare alla mente cose studiate a scuola e acquisirne di nuove. Spesso le prime settimane del corso richiedono perciò allo studente un grosso lavoro personale, che solo parzialmente può essere guidato dalle lezioni. Questo libro è scritto per aiutare lo studente ad affrontare in modo costruttivo lo studio di queste prime, cruciali, settimane del corso, e per aiutare lo studente che scopra, a posteriori, di avere gravi lacune di base, a colmarle in modo autodidatta. Qui si forniscono quelle conoscenze, riguardanti soprattutto le funzioni elementari e i grafici di funzioni in generale, che sono necessarie per affrontare lo studio del calcolo infinitesimale in una variabile in modo fruttuoso e motivato. Numerosi esercizi sono assegnati nel testo; di tutti è riportata la soluzione nelle ultime pagine del libro, in modo che il lavoro personale possa avere un riscontro. Nonostante il carattere elementare degli argomenti trattati, questo testo non vuole essere un libro di ripasso delle matematiche elementari, ma l'inizio di un corso universitario, quanto agli obiettivi e al livello critico seguito.

C++ was written to help professional C# developers learn modern C++ programming. The aim of this book is to leverage your existing C# knowledge in order to expand your skills. Whether you need to use C++ in an upcoming project, or simply want to learn a new language (or reacquaint yourself with it), this book will help you learn all of the fundamental pieces of C++ so you can begin writing your own C++ programs. This updated and expanded second edition of *Book* provides a user-friendly introduction to the subject, Taking a clear structural framework, it guides the reader through the subject's core elements. A flowing writing style combines with the use of illustrations and diagrams throughout the text to ensure the reader understands even the most complex of concepts. This succinct and enlightening overview is a required reading for all those interested in the subject. We hope you find this book useful in shaping your future career & Business.

L'opera è un libro di testo, rivolto agli studenti universitari che devono affrontare il corso di algebra e matematica discreta. Temi quali gruppi, anelli e campi sono dapprima introdotti attraverso esempi semplici (così come numeri, polinomi e permutazioni) e sono successivamente discussi in modo approfondito nella seconda parte del libro. Vengono anche trattati temi come applicazioni alla crittografia, codici, informatica, fornendo anche cenni storici. Il volume mira ad offrire un'introduzione all'algebra in modo schematico e facilmente comprensibile.

Algebra e matematica discreta. Per studenti di informatica, ingegneria, fisica e matematica. Con numerosi esempi ed esercizi svolti. Notes on Discrete Math. Società Editrice Esculapio

Questo libro ha lo scopo di familiarizzare gli studenti con aspetti anche abbastanza moderni della teoria dei sistemi dinamici facendo quasi del tutto a meno dell'apparato matematico di analisi, algebra e

geometria. L'uso della simulazione numerica al calcolatore, sempre più importante nello studio dei sistemi dinamici, costituisce parte integrante di questo processo. Oltre ad abituare fin da subito gli studenti a mettere le mani sul calcolo scientifico, si mira a far sì che la presentazione di questi argomenti possa contribuire a due ulteriori processi formativi di sicuro valore: da una parte, vedere nascere in modo quasi spontaneo concetti matematici profondi e sottili e vederli all'opera nel concreto; dall'altra abituarsi fin da subito a lavorare con la matematica per analizzare quantitativamente le scienze della natura. Il libro è rivolto agli studenti dei corsi di laurea in matematica, fisica, biologia, ingegneria, ma anche economia, informatica e scienze della comunicazione.

Ambientato nella seconda metà dell'XI secolo, durante il periodo della Reconquista spagnola, il romanzo narra la storia di Rodrigo Díaz de Vivar, il condottiero che partecipò alla riconquista dei territori della penisola iberica finiti in mano al califfato islamico di al-Ándalus. Il narratore è Diego de Ubierna, il fedele scudiero di Rodrigo, che racconta in prima persona la vita e le gesta di El Cid, a distanza di qualche anno dalla sua morte. L'opera si apre con l'incontro tra i due. Nel 1063, Rodrigo è ormai investito ufficialmente della carica di cavaliere dell'esercito di re Ferdinando I ed è alla ricerca di uno scudiero; su consiglio del padre di Diego, conosciuto a corte, si reca al monastero di San Paolo di Cardeña dove il ragazzo viene accudito e cresciuto per diventare sacerdote sin dall'età di otto anni. Diego lascia il monastero e diventa il fedele e umile servitore del signore di Vivar. Inizia così la storia di una leggenda... Tra battaglie furiose, intrighi di corte, tradimenti e alleanze, la fama di Rodrigo cresce, la sua fama è talmente reboante che in tutto il regno riecheggiano poemi e canzoni sulle gesta del cosiddetto Campeador fino a quando, dopo anni di lotta, la sua figura risplenderà anche oltre i confini della Spagna

Just the mention of mathematics is enough to strike fear into the hearts of many, yet without it, the human race couldn't be where it is today. By exploring the subject through its 50 key insights--from the simple (the number one) and the subtle (the invention of zero) to the sophisticated (proving Fermat's last theorem)--this book shows how mathematics has changed the way we look at the world around us.

Linear algebra provides the essential mathematical tools to tackle all the problems in Science. Introduction to Linear Algebra is primarily aimed at students in applied fields (e.g. Computer Science and Engineering), providing them with a concrete, rigorous approach to face and solve various types of problems for the applications of their interest. This book offers a straightforward introduction to linear algebra that requires a minimal mathematical background to read and engage with. Features Presented in a brief, informative and engaging style Suitable for a wide broad range of undergraduates Contains many worked examples and exercises

The book provides an introduction to Differential Geometry of Curves and Surfaces. The theory of curves starts with a discussion of possible definitions of the concept of curve, proving in particular the classification of 1-dimensional manifolds. We then present the classical local theory of parametrized plane and space curves (curves in  $n$ -dimensional space are discussed in the complementary material): curvature, torsion, Frenet's formulas and the fundamental theorem of the local theory of curves. Then, after a self-contained presentation of degree theory for continuous self-maps of the circumference, we study the global theory of plane curves, introducing winding and rotation numbers, and proving the Jordan curve theorem for curves of class  $C^2$ , and Hopf theorem on the rotation number of closed simple curves. The local theory of surfaces begins with a comparison of the concept of parametrized (i.e., immersed) surface with the concept of regular (i.e., embedded) surface. We then develop the basic differential geometry of surfaces in  $R^3$ : definitions, examples, differentiable maps and functions, tangent vectors (presented both as vectors tangent to curves in the surface and as derivations on germs of differentiable functions; we shall consistently use both approaches in the whole book) and orientation. Next we study the several notions of curvature on a surface, stressing both the geometrical meaning of the objects introduced and the algebraic/analytical methods needed to study them via the Gauss map, up to the proof of Gauss' Teorema Egregium. Then we introduce vector fields on a surface (flow, first integrals, integral curves) and geodesics (definition, basic properties, geodesic curvature, and, in the complementary material, a full proof of minimizing properties of geodesics and of the Hopf-Rinow theorem for surfaces). Then we shall present a proof of the celebrated Gauss-Bonnet theorem, both in its local and in its global form, using basic properties (fully proved in the complementary material) of triangulations of surfaces. As an application, we shall prove the Poincaré-Hopf theorem on zeroes of vector fields. Finally, the last chapter will be devoted to several important results on the global theory of surfaces, like for instance the characterization of surfaces with constant Gaussian curvature, and the orientability of compact surfaces in  $R^3$ .

Un amore che prevarica il tempo e lo spazio, un'equazione del cuore, dove Norma sta ad Attilio, come Nino sta ad Aida. Norma, proprietaria di un locale nel centro storico di Genova, cuoca e appassionata lettrice è a Parigi. Mentre gironzola tra le bancarelle lungo la Senna, un libro attrae la sua attenzione, si tratta di una vecchia edizione di un romanzo scritto in italiano, la cui casa editrice è la "Gaggero Editori Genovesi". Incuriosita lo compra. La lettura la coinvolge e sconvolge al contempo, si ritrova in ogni pagina e in ogni pensiero, come fosse lei l'attrice di quella trama. Non è un romanzo di fantasia, ma la storia vera di Nino, cuoco come lei, e Aida, insegnante e cultrice della conoscenza, entrambi impegnati nella lotta clandestina per la libertà e decisi a vivere appieno il loro amore assoluto. Fulcro della rivolta partigiana a Genova è proprio la Gaggero Editori, che ha sede nei locali dove adesso lei ha il suo ristorante - biblioteca. Le coincidenze che uniscono quelle vite diventano troppe per poter essere considerate frutto del caso. Norma con l'aiuto di Attilio, romanziere e storico, si trasforma in protagonista alla ricerca della verità.

These are notes of my Discrete Mathematics lectures held for students in Communication and Electric Engineering at Sapienza, the University of Roma. Roughly, the course is composed of the following parts: 1. Elements of Number Theory 2. elements of modern algebra 3. elements of combinatorics 4. elements of graph theory My objective was to illustrate several topics in different areas of modern mathematics into which Discrete Mathematics can be subdivided. Moreover, I wanted to give an "experimental" approach to the study of the material by repeatedly inviting students, whenever possible or feasible, to use a computer and a computer algebra system to carry out experimentation. Given the great variety of possible topics it was difficult to select a single book containing everything I wanted to show and only that. I therefore consulted many different sources that are acknowledged in the bibliography and I recommend them for further study. Some sections written in smaller fonts can be skipped or skimmed in a first reading as they do not properly belong to a traditional course on Discrete Mathematics, but that I felt important enough to include here with the aim of stimulating the curiosity of inquiring young minds.

This book is an introduction to the study of ordinary differential equations and partial differential equations, ranging from elementary techniques to advanced tools. The presentation focuses on initial value problems, boundary value problems, equations with delayed argument and analysis of periodic solutions: main goals are the analysis of diffusion equation, wave equation, Laplace equation and signals. The study of relevant examples of differential models highlights the notion of well-posed problem. An expanded tutorial chapter collects the topics from basic undergraduate calculus that are used in subsequent chapters. A wide exposition concerning classical methods for solving problems related to differential equations is available: mainly

separation of variables and Fourier series, with basic worked exercises. A whole chapter deals with the analytic functions of complex variable. An introduction to function spaces, distributions and basic notions of functional analysis is present. Several chapters are devoted to Fourier and Laplace transforms methods to solve boundary value problems and initial value problems for differential equations. Tools for the analysis appear gradually: first in function spaces, then in the more general framework of distributions, where a powerful arsenal of techniques allows dealing with impulsive signals and singularities in both data and solutions of differential problems. This Second Edition contains additional exercises and a new chapter concerning signals and filters analysis in connection to integral transforms.

Si tratta di un libro di testo per i corsi di Matematica delle lauree specialistiche della classe di Biologia e Scienze Naturali. Sarà di interesse anche per studenti dello stesso livello in Scienze Ambientali ed anche di Medicina. Potrebbe essere usato (in particolare i suoi capitoli piu' avanzati, segnatamente quelli che trattano la teoria dell'evoluzione) anche come testo complementare per corsi di Biomatematica.

[Copyright: a392a73d36776bcf8a28b251de906a8d](https://www.doi.org/10.1007/978-88-470-2511-1)