

Field Theory Handbook: Including Coordinate Systems, Differential Equations And Their Solutions



Synopsis

Let us first state exactly what this book is and what it is not. It is a compendium of equations for the physicist and the engineer working with electrostatics, magnetostatics, electric currents, electromagnetic fields, heat flow, gravitation, diffusion, optics, or acoustics. It tabulates the properties of 40 coordinate systems, states the Laplace and Helmholtz equations in each coordinate system, and gives the separation equations and their solutions. But it is not a textbook and it does not cover relativistic and quantum phenomena. The history of classical physics may be regarded as an interplay between two ideas, the concept of action-at-a-distance and the concept of a field. Newton's equation of universal gravitation, for instance, implies action-at-a-distance. The same form of equation was employed by COULOMB to express the force between charged particles. AMPERE and GAUSS extended this idea to the phenomenological action between currents. In 1867, LUDVIG LORENZ formulated electrodynamics as retarded action-at-a-distance. At almost the same time, MAXWELL presented the alternative formulation in terms of fields. In most cases, the field approach has shown itself to be the more powerful.

Book Information

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Customer Reviews

Moon and Spencer's classic reference is an excellent resource for any researcher who is at all considering utilizing coordinate transformations. It's extensive descriptions of the field equations for 41 different orthonormal coordinate systems has been essential for my own research. This text clearly lays out usable forms of operators and the approach to applying them. FTH also contains

descriptions of methods of transforms using complex variables. I personally look forward to it's assistance in making different systems soluble for many years to come. Unfortunately, the previous comment about the price and quality of the recent reprints is correct. The paper-back reprints are very rudimentary; basically just the text on normal printer paper, bound together and not very durable. However, I know someone personally who was able to acquire the original hard-copy which is a very nice textbook.

This is a complete rip off. Only in the fine print of the Zubal offer do you see that this is a facsimile (i.e. cheap photocopy) of the original. Paying over \$100 for what should be about \$20 is unacceptable.

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