Título: Lectures On Linear Partial Differential Equations

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Sinopsis

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This book is a reader-friendly, relatively short introduction to the modern theory of linear partial differential equations. An effort has been made to present complete proofs in an accessible and self-contained form.

The first three chapters are on elementary distribution theory and Sobolev spaces with many examples and applications to equations with constant coefficients. The following chapters study the Cauchy problem for parabolic and hyperbolic equations, boundary value problems for elliptic equations, heat trace asymptotics, and scattering theory. The book also covers microlocal analysis, including the theory of pseudodifferential and Fourier integral operators, and the propagation of singularities for operators of real principal type. Among the more advanced topics are the global theory of Fourier integral operators and the geometric optics construction in the large, the Atiyah-Singer index theorem in $\mathbb R^n$, and the oblique derivative problem.