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Sinopsis

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Since the foundational work of Lagrange on the differential equation to be satisfied by a minimal surface of the Euclidean space, the theory of minimal submanifolds have undergone considerable developments, involving techniques from related areas, such as the analysis of partial differential equations and complex analysis. On the other hand, the relativity theory has led to the study of pseudo-Riemannian manifolds, which turns out to be the most general framework for the study of minimal submanifolds. However, most of the recent books on the subject still present the theory only in the Riemannian case.

For the first time, this book provides a self-contained and accessible introduction to the subject in the general setting of pseudo-Riemannian geometry, only assuming from the reader some basic knowledge about manifold theory. Several classical results, such as the Weierstrass representation formula for minimal surfaces, and the minimizing properties of complex submanifolds, are presented in full generality without sacrificing the clarity of exposition. Finally, a number of very recent results on the subject, including the classification of equivariant minimal hypersurfaces in pseudo-Riemannian space forms and the characterization of minimal Lagrangian surfaces in some pseudo-Kähler manifolds are given