

Coulomb frames in the normal bundle of surfaces in euclidean spaces : topics from differential geometry and geometric analysis of surfaces

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Abstrak

This book is intended for advanced students and young researchers interested in the analysis of partial differential equations and differential geometry. It discusses elementary concepts of surface geometry in higher-dimensional Euclidean spaces, in particular the differential equations of Gauss-Weingarten together with various integrability conditions and corresponding surface curvatures. It includes a chapter on curvature estimates for such surfaces, and, using results from potential theory and harmonic analysis, it addresses geometric and analytic methods to establish the existence and regularity of Coulomb frames in their normal bundles, which arise as critical points for a functional of total torsion.