W. Thirring

A Course
in Mathematical Physics

Translated from the German by **E. M. Harrell**

Contents: Systems with Many Particles. – Thermostatics. – Thermodynamics. – Physical Systems. – Bibliography. – Index.

In the final volume of his rigorous course in mathematical physics (translated from the german edition, with corrections), Thirring develops quantum statistical mechanics from a modern point of view and studies some physically relevant systems in detail. The author clears away the clutter of tradition, recognizing that ordinary perturbation-theoretic calculations are not particularly useful in this field. Fortunately, the past twenty years have seen successful treatments of many fundamental issues which are incorporated into this volume: the ordering of the states, properties of the entropy, non-commutative ergodic theory, the proof of the existence of the thermodynamic functions, and the mathematical analysis of Thomas-Fermi theory, which provides an understanding of the stability of matter. The notions of local observables, entropy and ergodic properties are treated in the appropriate algebraic framework. Many of the pertinent results are appearing here for the first time in textbook form. For the mathematician, this will be a solid introduction to a fruitful area for applications of modern mathematical methods. For the physicist, a systematic compilation of important twentieth-century contributions to this field of long tradition.