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Autor: Schneider Rolf/ Weil Wolfgang

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Stochastic geometry has in recent years experienced considerable progress, both in its applications to other sciences and engineering, and in its theoretical foundations and mathematical expansion. This book, by two eminent specialists of the subject, provides a solid mathematical treatment of the basic models of stochastic geometry -- random sets, point processes of geometric objects (particles, flats), and random mosaics. It develops, in a measure-theoretic setting, the integral geometry for the motion and the translation group, as needed for the investigation of these models under the usual invariance assumptions. A characteristic of the book is the interplay between stochastic and geometric arguments, leading to various major results. Its main theme, once the foundations have been laid, is the quantitative investigation of the basic models. This comprises the introduction of suitable parameters, in the form of functional densities, relations between them, and approaches to their estimation. Much additional information on stochastic geometry is collected in the section notes.

As a combination of probability theory and geometry, the volume is intended for readers from either field. Probabilists with interest in random spatial structures, or motivated by the prospect of applications, will find an in-depth presentation of the geometric background. Geometers can see integral geometry "at work" and may be surprised to learn how classical results from convex geometry have elegant applications in a stochastic setting.