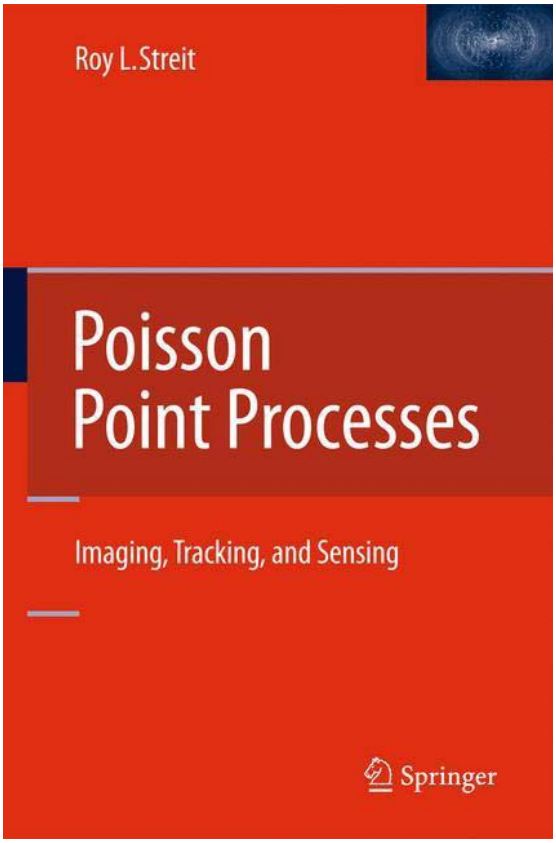

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Poisson Point Processes

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Poisson Point Processes provides an overview of non-homogeneous and multidimensional Poisson point processes and their numerous applications, written particularly for non-specialists. Readers will find constructive mathematical methods, and applications ranging from emission and transmission computed tomography to **multiple target tracking and distributed sensor detection**, all written from an engineering perspective.

A valuable discussion of the basic properties of finite random sets is included that is broadly accessible. Maximum likelihood estimation techniques are discussed for several parametric forms of the intensity function. Of special interest are **Gaussian sums and their Cramér-Rao bounds**. These methods are used to investigate practical applications of Poisson point processes in diverse areas:

- **Medical imaging techniques**, including positron emission tomography (PET), single photon emission computed tomography (SPECT), transmission tomography (CT scans),
- **Multi-target and multi-sensor tracking** via the Intensity Filter (iFilter) and PHD filter,
- **Distributed sensor fields,** communication diversity, and detection coverage with stationary and moving/drifting fields,
- **Related finite point processes** such as marked processes, hard core and cluster processes, and doubly stochastic processes.

Perfect for researchers, engineers and graduate students working in electrical engineering and computer science, ***Poisson Point Processes*** will prove to be an extremely valuable volume for those seeking insight into the nature of these processes and their diverse applications.