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Nota di contenuto	Foreword; Preface; References; Contents; 1 Poisson Point Processes; 1.1 Point Functions; 1.2 Point Processes; 1.3 Poisson Point Processes; 1.4 The Structure of Poisson Point Processes (1) the Discrete Case; 1.5 The Structure of Poisson Point Processes (2) the General Case; 1.6 Transformation of Poisson Point Processes; 1.7 Summable Point Processes; 1.8 The Strong Renewal Property of Poisson Point Processes; References; 2 Application to Markov Processes; 2.1 Problem; 2.2 The Poisson Point Process Attached to a Markov Process at a State a; 2.3 The Jumping-In Measure and the Stagnancy Rate
Sommario/riassunto	An extension problem (often called a boundary problem) of Markov processes has been studied, particularly in the case of one-dimensional diffusion processes, by W. Feller, K. Itô, and H. P. McKean, among others. In this book, Itô discussed a case of a general Markov process with state space S and a specified point $a \in S$ called a boundary. The problem is to obtain all possible recurrent extensions of a given minimal process (i.e., the process on $S \setminus \{a\}$ which is absorbed on reaching the boundary a). The study in this lecture is restricted to a simpler case of the boundary a being a discontinuous entrance point,

leaving a more general case of a continuous entrance point to future works. He established a one-to-one correspondence between a recurrent extension and a pair of a positive measure $k(db)$ on $S \setminus \{a\}$ (called the jumping-in measure and a non-negative number $m <$ (called the stagnancy rate). The necessary and sufficient conditions for a pair k, m was obtained so that the correspondence is precisely described. For this, Itô used, as a fundamental tool, the notion of Poisson point processes formed of all excursions of the process on $S \setminus \{a\}$. This theory of Itô's of Poisson point processes of excursions is indeed a breakthrough. It has been expanded and applied to more general extension problems by many succeeding researchers. Thus we may say that this lecture note by Itô is really a memorial work in the extension problems of Markov processes. Especially in Chapter 1 of this note, a general theory of Poisson point processes is given that reminds us of Itô's beautiful and impressive lectures in his day.
