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Sommario/riassunto	This book grew out of a graduate course at ETH Zurich during the Spring term 2011. It explores various links between such notions as occupation times of Markov chains, Gaussian free fields, Poisson point processes of Markovian loops, and random interlacements, which have been the object of intensive research over the last few years. These notions are developed in the convenient set-up of finite weighted graphs endowed with killing measures. The book first discusses elements of continuous-time Markov chains, Dirichlet forms, potential theory, together with some consequences for Gaussian free fields. Next, isomorphism theorems and generalized Ray-Knight theorems, which relate occupation times of Markov chains to Gaussian free fields, are pre- sented. Markovian loops are constructed and some of their key properties derived. The field of occupation times of Poisson point processes of Markovian loops is investigated. Of special interest are its connection to the Gaussian free field, and a formula of Symanzik. Finally, links between random interlacements and Markovian loops are discussed, and some further connections with Gaussian free fields are mentioned.