Random walks relative to multiple transition matrices

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In discrete time $0, 1, \ldots, k$ a particle is travelling between a finite set of states relative to a transition matrix and constitutes a random walk of length k. Given the cost matrix corresponding to transitions between states, the mean of the cost along a random walk of length k starting at some specified state needs to be computed in many applications. In this talk, we first introduce a generalization of the above model for multiple transition and cost matrices, and then propose Monte Carlo techniques to get approximation of the mean by using random numbers and simulation. Experiments on artificial data are conducted to evaluate the performance of the presented approaches in comparison with the one that uses diffusion wavelets method for computing powers of matrices.