Perturbation analysis for continuous-time Markov chains

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Abstract: We investigate perturbation for continuous-time Markov chains (CTMCs). The explicit bounds on ΔD and D are derived in terms of a drift condition, where Δ and D represent the perturbation of the intensity matrices and the deviation matrix, respectively. Moreover, we obtain the perturbation bounds on the stationary distributions, which extend the results in Liu (2012) for uniformly bounded CTMCs to general (possibly unbounded) CTMCs. Our arguments are mainly based on the technique of the augmented truncation.