THE ROLE OF THE DEVIATION MATRIX IN ASYMPTOTIC FUNCTIONALS OF MARKOV CHAINS

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In this talk, we look at the deviation matrix of continuous-time Markov processes, and we discuss the role played by this matrix in asymptotic functionals of these processes. In particular, we use properties of the deviation matrix to revisit the BRAVO effect occurring in the asymptotic variance of the output process of the single-server finite capacity M/M/1/K queue (see Yoni Nazarathy's talk), and to obtain explicit expressions for the second order approximation of the variance curve. In light of the deviation matrix, we also analyse asymptotic functionals of other queueing systems such as the multi-server finite capacity M/M/K/K queue (also called the Erlang loss system).