Optimal estimation of quantum Markov chains

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In this talk I will discuss the problem of estimating dynamical parameters of a quantum Markov chain by means of sequential measurements. The key tool will be the use of a coherent quantum absorber which transforms the problem into a simpler one pertaining to a system with a pure stationary state. I will then define certain translationally invariant modes of the output and show that the output state reduces to a coherent state of these modes. This provides a concrete representation of the local asymptotic normality phenomenon for Markov dynamics. I will then show how to optimally estimate the unknown parameter by using the recently developed technique of displaced-null measurements.