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Higher order asymptotics for Large Deviations

For sequences of weakly dependent random variables, we obtain higher order asymptotics for the Large Deviation Principle in the form of an asymptotic expansion. We apply our results to Diophantine iid sequences, finite state Markov chains, strongly ergodic Markov chains and ergodic sums of smooth expanding maps & subshifts of finite type. In addition, we obtain similar expansions for stochastic processes, and establish them for additive functionals of processes generated from SDEs satisfying the Hörmander condition. This is joint work with Pratima Hebbar.