

# Hidden Markov likelihoods behave like IID ones.

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## Abstract.

We consider the log-likelihood function of hidden Markov models, its derivatives and expectations of these such as the entropy and its derivatives. We give expressions for these functions and bound them as the length of the chain increases. We apply our bounds to obtain partial second order asymptotics and some qualitative properties of a special model as well as extend some results of Petrie(1969).

Extensions to state space models are discussed.