

## Stochastic optimal control problem for Markov jump process: asymptotic analysis and algorithms

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We consider certain stochastic optimal control problems for Markov jump process in the large number regime. For both open loop and feedback control problem, based on Kurtz's limiting theorems, we prove the convergence of the value functions for the optimal control problem of Markov jump process as the "species" number goes to infinity. In the case of finite time horizon, A hybrid control policy is proposed to overcome the difficulties due to the large state space as the "species" number increases. Numerical examples are studied to demonstrate the analysis and algorithms.

This is a joint work [1] with Prof. Carsten Hartmann and Max von Kleist at Freie Universität Berlin.

### References

- [1] C. Hartmann, M. von Kleist, and W. Zhang. Optimal control for Markov jump process : asymptotic analysis and algorithms. *submitted to Multiscale Model. Simul.*, 2015.