



## PROBABILITY SEMINAR

# An Optimal Transport Approach to Ruelle Operator

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**Abstract.** In [1] Kloeckner proves a Ruelle-Perron-Frobenius theorem for a quite general type of transfer operator, acting on potentials defined over a compact configuration space. In this seminar we will obtain a RPF Theorem for transfer operators acting over a class of potentials defined on standard Borel spaces (removing the requirement of compactness) by using optimal transport techniques [2], [3]. Also we present a Decay of Correlation result and limit theorems for Markov chain.

## References

- [1] KLOECKNER, B. *An optimal transportation approach to the decay of correlations for non-uniformly expanding maps*. Ergodic Theory and Dynamical Systems, 1-37. doi:10.1017/etds.2018.49.
- [2] HAIRER, M., MATTINGLY, J. C. *Spectral gaps in Wasserstein distances and the 2D stochastic Navier-Stokes equations*. Ann. Probab. 36 (2008), no. 6, 2050–2091. doi:10.1214/08-AOP392. <https://projecteuclid.org/euclid.aop/1229696596>.
- [3] BESSA, M., STADLBAUER, M. *On the Lyapunov spectrum of relative transfer operators*. Stochastics and Dynamics, Vol. 16, No. 6 (2016) 1650024 (25 pages), World Scientific Publishing Company, DOI: 10.1142/S0219493716500246.