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*WKB Approximation of Quasi-stationary Distributions with Applications*

Quasi-stationary distribution (QSD) is a powerful tool in characterizing the local dynamics of a dynamical system under noise perturbations. Its WKB approximation can be used to extract essential dissipative and conservative structures, thus aiding in gaining a clearer understanding of the local dynamics under noise perturbations. This talk is dedicated to discussing recent mathematical advancements surrounding the WKB approximation of QSDs and their applications to the potential-landscape and flux framework and Helmholtz decomposition.