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*Spectral Monotonicity of Perturbed Quasi-positive Matrices with Applications in Population Dynamics*

The reduction principle for structured population model states that fast dispersal will reduce the growth rate for a spatially distributed population. This reduction principle is proved in two different ways: one using graph theoretical method, and the one using analytic method. Applications of the reduction principle are shown for scalar model, competition model and predator-prey model. This is a joint work with Shanshan Chen, Zhisheng Shuai and Yixiang Wu.