# Internal Seminar

## Fixation in Population Dynamics: Diffusion, Conservation, and Competition

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We study competition between two types of species in biological processes in which individuals diffuse in a spatially extended system. We ask how and under what conditions relative diffusivity of species affect survival probability in natural populations. We show that, for the case of symmetric reactions, relative diffusivity affects the fixation probability only when the intraspecies competition is considered. The scenario is very different with a selective advantage, wherein the survival probability depends on the details of a model. Interestingly, for fluctuating voter model, if the species is weaker, the slowly-moving is the better strategy and if the species is stronger fast-moving is the better strategy. However, we show numerically and via analytical calculation for a simple model, that either for a case of symmetric reactions or a case with a selective advantage, the total number conservation in population makes the survival probability immune to the interspecies relative diffusivity.

*Wednesday, Sep 18th 2019*

*2:30 PM (Tea/Coffee at 2:00 PM)*

*Seminar Hall, TIFR-H*