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Semigroups in biophysics: stochastic Liouville equation

Long time behaviour problem in the model of stochastic gene expression, where we consider one specific gene (or just a particle) is known and solved [2]. Stochastic semigroups play important role in mathematical description of such phenomenon. Here we will discuss new concept introduced by American physicist Paul Bressloff [1] to investigate the influence of the stochastic environmental input to the whole population of particles. It appears that stochastic semigroups can be used in mathematical description of the problem once again.

References

[1] P. Bressloff, *Stochastic Liouville equation for particles driven by dichotomous environmental noise.*, Physical Review E **95** (2017), no. 012124.

[2] R. Rudnicki and A. Tomski, *On a stochastic gene expression with pre-mRNA, mRNA and protein contribution*, Journal of Theoretical Biology **21** (2015), no. 387, 54–67.