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Inferring the density of spikes in high-dimensional data spaces [draft]

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Notes and memos on rate, tuning, mutual information.
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1 Synopsis

We have three time-dependent quantities: activity $a(t)$, position $\boldsymbol{r}(t) \coloneqq \big(x(t), y(t)\big)$, direction $\theta(t)$. The first is a generalized function[1], the second a 2D vector, the third an angle (periodic). We are interested in the statistical associations between the first and the second, the first and the third, and the first and the second & third jointly.

By statistical association we mean the features of the limit joint frequencies of these quantities, in a hypothetical experiment which lasts a very long time and the experimental conditions remain the same. We are therefore not speaking about 'causal' relations among the quantities.

https://cran.r-project.org/package=dirichletprocess
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('de *X*' is listed under D, 'van *X*' under V, and so on, regardless of national conventions.)

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