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THE MOST PROBABLE PATHS FOR DIFFUSIONS WITH JUMPS

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We generalize well-known results on the Onsager–Machlup functional for diffusions. The case of Lévy processes with finite number of jumps and diffusions with jumps were considered in our work. The Onsager–Machlup functional of a càdlàg process X is defined by the following expression

$$OM(f, \psi) = \lim_{\varepsilon \rightarrow 0} \frac{P\{\omega : \|X(\omega) - f\| < \varepsilon\}}{P\{\omega : \|X(\omega) - \psi\| < \varepsilon\}},$$

where $\|\cdot\|$ is a norm in the Skorokhod space $D[0, \infty]$. This expression gives a tool to compare weights of trajectories of the corresponding process, also it is naturally connected with the most probable sample path of the process. This interpretation leads to the number of applications, for example, to the popular Customer Journey Maps problem.

References

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