A path integral approach to continuous time random walks

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The knowledge of single time probability distributions is not sufficient to characterize nonmarkovian stochastic processes. Recently, Continuous Time Random Walks have been used to model a variety of complex systems **Metzler**. Some effort has been made to access multi-point probabilities for CTRW processes **Adrian, Sokolov**.

Using the method of subordination and applying an idea of Fogedby **Fogedby** we construct a path integral formalism for CTRW processes. This path integral yields an extension of the Wiener path intergral for Brownian motion.