1086-83-1473 **Alberto Mokak Teguia*** (alberto@math.duke.edu), 2440 north boulevard, apt 3302, Houston, TX 77098. *Stochastic Gravitational Microlensing: Mathematical Theory and Applications.*

Stochastic microlensing is a powerful tool used to probe the nature of dark matter on galactic scale. I develop general mathematical framework for stochastic microlensing and characterize the stochastic behavior of fundamental physical quantities. Next I study two specific lensing scenarios: The uniform stars' distribution and the spatial stars' distribution with general mass spectrum. In each case, I present both exact and asymptotic properties of random lensing observables. These results allow us to make testable predictions about dark matter substructure. I finish with a look toward further generalization of my results. (Received September 22, 2012)