1106-60-2025 **Mark M Meerschaert*** (mcubed@stt.msu.edu) and **Peter Straka**. *SEMI-MARKOV APPROACH TO CONTINUOUS TIME RANDOM WALK LIMIT PROCESSES.*

Continuous time random walks (CTRWs) are versatile models for anomalous diffusion processes that have found widespread application in the quantitative sciences. Their scaling limits are typically non-Markovian, and the computation of their finite-dimensional distributions is an important open problem. This paper develops a general semi-Markov theory for CTRW limit processes in R^d with infinitely many particle jumps (renewals) in finite time intervals. The particle jumps and waiting times can be coupled and vary with space and time. By augmenting the state space to include the scaling limits of renewal times, a CTRW limit process can be embedded in a Markov process. Explicit analytic expressions for the transition kernels of these Markov processes are then derived, which allow the computation of all finite dimensional distributions for CTRWlimits. Two examples illustrate the proposed method. (Received September 15, 2014)