1065-37-179   **Nicolai T Haydn*** (`nhaydn@usc.edu`), Department of Mathematics, University of Southern California, Los Angeles, CA 90089. *Return times statistics for Markov towers.*

We show that for Lai-Sang Young's Markov towers the return times are in the limit Poisson distributed for return sets that are allowed to be countably infinite unions of cylinders. We use the decay of correlations for Hölder continuous functions paired up with L^∞ functions and the Chen-Stein method to obtain the approximate Poisson distribution for the return times distribution. We also obtain error estimates assuming the return set satisfies a 'non-periodicity' condition to avoid very short periodic like returns. (Received September 13, 2010)