1077-05-1599 **Tomohiro Sasamoto** and **Lauren K Williams*** (williams@math.berkeley.edu). *A curious relation between two Markov chains.*

A Markov chain is a collection of states, together with transition probabilities that describe how likely it is to move from one state to another. What happens when one makes some of those probabilities *negative*? There is no reason that such an operation should have any meaning.

The asymmetric exclusion process (ASEP) is a Markov chain on a lattice of n sites, in which particles can hop left and right, subject to the condition that there is at most one particle per site. They can also enter and exit the lattice at the left (with probabilities alpha and gamma), and exit and enter the lattice at the right (with probabilities beta and delta). We will explain that if one sets delta equal to NEGATIVE beta, the resulting "steady state probabilities" describe a different Markov chain ... more specifically, an exclusion process on a semi-infinite lattice. Additionally, we will describe the rich tableaux combinatorics that describes the steady state distributions of both models. (Received September 22, 2011)