Rectification in Doped Mott Insulators Junctions\footnote{NSF DMR-0605619} FLORIAN SABOU, JOHN MARSTON, Brown University — We discuss junctions made from doped Mott insulators \cite{Orenstein2010} as a way to achieve rectification at high frequencies. To simulate such a junction we use a model of spinless electrons moving in one dimension, the t-V chain, and control the chemical potential on the two halves of the chain to create a p-n junction \cite{Manousakis2010}. For short chains the many-body Schrodinger equation can be integrated numerically exactly, and we find that when subjected to an oscillating electromagnetic field such a device exhibits rectification with a preferred direction for charge transfer. Rectification is a function of both the frequency and the size of the oscillating electric field.


\textsuperscript{1} NSF DMR-0605619