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## Combinatorics of hopping particles and positivity in Markov chains

The asymmetric simple exclusion process (ASEP) is a model for translation in protein synthesis and traffic flow; it can be defined as a Markov chain describing particles hopping on a one-dimensional lattice. I will give an overview of some of the connections of the stationary distribution of the ASEP to combinatorics and special functions. I will also



mention some open problems and observations about positivity in Markov chains.