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*Macdonald polynomials and the multispecies zero range process.*

The connection of the Macdonald polynomials  $P_\lambda$  to the well-studied particle model called the ASEP (asymmetric simple exclusion process) has been known for some time. Namely, the partition function of the ASEP is the specialization of  $P_\lambda(X; q, t)$  at  $x_1 = \cdots = x_n = q = 1$ . Recently, an analogous connection has been found between the modified Macdonald polynomials and a multispecies totally asymmetric zero-range process (mTAZRP), where  $\tilde{H}_\lambda(X; q, t)$  specializes to the partition function of the latter at  $q = 1$ . This link motivated a new formula for the modified Macdonald polynomials in terms of a statistic on tableaux called queue inversions (quinv). We present a Markov process on these tableaux with the quinv statistic that projects to the TAZRP, and obtain formulas for the stationary distribution. Joint work with Arvind Ayyer and James Martin. (Received January 24, 2022)