

# Exact partition function of the zero-range process and expectation values in the thermodynamic limit

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In this talk, we give the partition function for the zero-range process in the nonequilibrium steady state using hypergeometric functions, and then calculate some expectation values. All the calculations are done for an arbitrary finite system, and thereafter we consider the thermodynamic limit. From the viewpoint of application (e.g. traffic flow, and pedestrian dynamics), we also consider parallel updating, i.e., all sites are updated in concert. The parallel updating seems to give rise to a global interaction, but nevertheless the partition function can be obtained in the same manner above.