

EIGENVALUE DISTRIBUTIONS OF REDUCED DENSITY  
MATRICES

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Given a random quantum state of multiple (distinguishable or indistinguishable) particles, we provide an algorithm to compute the joint probability distribution of the eigenvalues of its one-body reduced density matrices. As a corollary, by taking the support of this probability distribution we recover a complete solution to the one-body quantum marginal problem. We will illustrate our method with concrete examples.