

# **Richardson-Gaudin Wavefunctions for Strong Correlation**

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Weakly-correlated systems are well-described as individual electrons. The dominant contribution to the wave function is a Slater determinant of the occupied orbitals, with small corrections from single- and double-excitations. This is not the case for strongly-correlated systems. Many Slater determinants contribute substantially and thus the correct physical picture is not independent electrons. For molecular systems we have shown that Richardson-Gaudin (RG) states are a much better starting point. They amount to pair wave functions, but they are tractable and form a basis of the Hilbert space, allowing for systematic improvement.