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Quasibound States of Single-Particle Systems CURT MOYER, Department of Physics and Physical Oceanography, UNC Wilmington — We have developed a formalism that describes both quasibound and resonant states within the same theoretical framework, and that admits a clean and unambiguous distinction between these states and the states of the embedding continuum. The approach described here builds on our earlier work by clarifying several crucial points and extending the theory to encompass a variety of continuous spectra, including those with degenerate energy levels. The result is a comprehensive and compelling formalism for the study of quasibound states. The difference between 'quasibound' and 'resonant' states turns out to be largely semantic, inasmuch as both arise from imposing what is arguably the same mathematical rule (a point condition in a novel basis set). Enforcing that rule in a given application is straightforward in principle. The formalism is illustrated by examining several cases pertinent to applications widely discussed in the literature.

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