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Bohmian conditional wave functions and the reality of the quantum state

Because it allows a natural and mathematically sharp definition of “the wave function of a subsystem”, the de Broglie - Bohm pilot-wave theory provides a helpful perspective on questions about the ontological status of the quantum state. We will give a pedagogical introduction to the Bohmian conditional wave function (CWF), centered on numerical simulation of a simple toy-model system which illustrates the role of the CWF in explaining (from the pilot-wave perspective) the standard quantum formalism. We will then explain the motivation behind the program of using the Bohmian CWF to reformulate the pilot-wave theory as a “theory of exclusively local beables” (TELB).

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