How much Quantum Mechanics do we need?

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The present interpretation of physics only allows elementary particles to be described and treated on the basis of quantum mechanics.

Physicists have problems with QM. Most processes are counterintuitive because outcomes are viewed as a superposition of several conflicting states. Also, QM only yields statistical results for physical processes. Furthermore, different measurements conflict with results of the theory, for example there is a discrepancy between vacuum polarization, i.e. the existence and energy of virtual particles, and the measured energy of the universe. Here, the huge discrepancy in the energy is 120 orders of magnitude (“vacuum catastrophe”). And a similar problem is seen with the Higgs model for inertia, where the discrepancy between the magnitude needed for the Higgs field and the observed one is at least 57 orders of magnitude. – These problems are generally admitted but not openly discussed by the scientific community.

Historically, the need for QM arose from a set of assumptions about elementary particles (e.g. the electron being understood as an unstructured object) which were made at the beginning of QM – around the year 1920 – and which resulted from insufficiently proven believes, but which became so widely accepted that no serious attempt was made to look for other approaches.

Using the example of the electron, we will show that taking a realistic attitude towards what was known about the electron in the early days of QM would have explained most properties of the particle by classical means. Some ideas of QM may still be necessary despite this, but only to a small extent.