I will describe a mathematical approach to the problem of incorporating relativistic gravity into quantum mechanics. In this approach, particles are identified with certain joint singularities of the spacetime and the electromagnetic field, whose motion --which cannot be dictated by the field equations themselves-- is instead guided by a quantum mechanical wave function defined on the particle configuration space. I will illustrate this point of view by re-examining the one-body Dirac equation for the electron in a Hydrogen atom (in Born-Oppenheimer approximation) and look at a few different ways of overcoming the main difficulty (already present at the classical level) in incorporating gravity into the picture, namely the problem of the infinite self-energy of point charges in Maxwell-Lorentz electrodynamics. I will conclude by briefly remarking on a corresponding many-body theory of electromagnetically interacting particles. (This is a joint project with Michael Kiessling.)