a new approach to Hohenberg-Kohn theorem PAUL LAMMERT, Pennsylvania State Univ — The Hohenberg-Kohn theorem is a cornerstone of electronic density functional theory, and yet in order to carry through its proof one must assume that ground state wavefunctions never vanish on a set of nonzero Lebesgue measure. This is a particularly unsatisfactory situation since DFT is supposed to avoid needing knowledge of the many-body wavefunction. I propose a new approach which puts conditions only on the density and potentials. This approach allows a proof that if the density is continuous and nowhere vanishing, then a representing potential in $L^2 + L^\infty$ is unique up to an overall constant.

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