

Abstract Submitted  
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**A Study of the Uniqueness of the Density for Nonequilibrium Systems** SELMAN HERSHFELD, University of Florida — By the Hohenberg-Kohn theorem the density in equilibrium is a unique functional of the the single particle potential. To gain an understanding of whether this is true in a nonequilibrium system with a current flowing, the density is studied for several noninteracting models. Although noninteracting models are not as realistic as interacting ones, they do have the advantage that they can be solved exactly. For sufficiently high bias or chemical potential difference we find that the density is not a unique functional of the potential for some models in the finite spatial region we study numerically. In other models the density is a unique functional of the potential even for large bias. An algorithm will be presented for finding cases where degeneracies exist and a simple physical picture will be given to understand them.

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