

Abstract Submitted
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A nonlinear quantum master equation symmetric with respect to particles and holes C.F. HUANG, CMS/ITRI, K.-N. HUANG, Department of Physics, NTU — A nonlinear master equation symmetric with respect to particles and holes has been introduced for systems composed of non-interacting identical fermions. [1,2] It can be reduced to semiclassical irreversible equation in the incoherent limit, and can be generalized to model interacting and/or open quantum systems. [2,3] To prove the validity of Pauli's exclusion principle, we note that such a principle holds true if and only if the density matrix for holes is a positive one. Suitable mathematical structures have been constructed to complete the proof when there exists an upper bound for the transition rate. Extensions based on BCS-type symmetry are taken into account to incorporate both particle-particle and particle-hole pairings. References: [1] K. Burke, R. Car, and R. Gebauer, Phys. Rev. Lett. **94**, 146803 (2005) [2] C. F. Huang and K. -N. Huang, quant-ph/0604054. [3] R. Alicki and K. Lendi, "Quantum Dynamical Semigroups and Applications" (Springer, Berlin Heidelberg 2007)

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