1109-35-245 **Michael Frazier*** (frazier@math.utk.edu), Department of Mathematics, University of Tennessee, 1403 Circle Drive, Knoxville, TN 37996-1320, and **Igor Verbitsky** (verbitskyi@missouri.edu), Department of Mathematics, University of Missouri - Columbia, Columbia, MO 65211. *Existence of positive solutions to certain Schrödinger equations.* Preliminary report.

Given a smooth bounded domain Ω and a nonnegative potential $q \in L^1_{loc}(\Omega)$, we consider the time-independent homogeneous Schrödinger equation $(-\triangle - q)\varphi = 0$ in Ω with $\varphi = 1$ on $\partial\Omega$. We obtain sufficient conditions for the existence of a positive weak solution φ. These conditions are that a certain operator be bounded with norm less than 1 on $L^2(q)$, and that $CP^*(\delta q)$, where δ is the distance to the boundary and P^* denotes the balyage, be exponentially integrable on the boundary of Ω for a sufficiently large constant C. With different constants, conditions of the same form are necessary. The main tool used in the proof is a result of Frazier-Nazarov-Verbitsky yielding kernel estimates for operators obtained from Neumann series. (Received February 02, 2015)