

Public Abstract

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In this thesis we study a well-known quasi-linear generalization of the time independent Schrodinger operator, under minimal assumptions on the underlying potential term. In particular, we are concerned with classes of potentials where classical tools such as Harnack's inequality fail.

We will consider two related problems. The first problem we will discuss is to develop a theory of positive solutions to the homogeneous equation. This has application to the characterization of certain weighted Sobolev inequalities. The second problem is the point-wise behavior of the fundamental solution of our quasi-linear operator.