

Schrödinger-type equations with singular potentials

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Abstract. Motivated by theoretical considerations of the famous double-slit experiment, we investigate notions of solutions to initial value problems for the Schrödinger equation containing irregular potentials and coefficients. Following the results of [1], establishing well-posedness in Colombeau generalized function spaces, we construct the very weak solution (established in [2]) for the problem, discuss questions of uniqueness and its consistency with weak solutions for regular coefficients.

Finally, we compare different concepts of solutions both using fundamental idea of regularising irregular coefficients and data and conclude that a combination of the methods has considerable advantages.

Results are obtained in collaboration with Christian Spreitzer from University of Vienna.

Keywords: generalized functions; regularization methods; Schrödinger equation

References

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