

Cazenave, Thierry; Weissler, Fred B.

The Cauchy problem for the nonlinear Schrödinger equation in H^1 . (English) Zbl 0696.35153
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Summary: We consider the initial value problem for the nonlinear Schrödinger equation in $H^1(\mathbb{R}^n)$. We establish local existence and uniqueness for a wide class of subcritical nonlinearities. The proofs make use of a truncation argument, space-time integrability properties of the linear equation, and a priori estimates derived from the conservation of energy. In particular, we do not need any differentiability property of the nonlinearity with respect to x .

MSC:

- 35Q99** Partial differential equations of mathematical physics and other areas of application Cited in **62** Documents
35A07 Local existence and uniqueness theorems (PDE) (MSC2000)
47J25 Iterative procedures involving nonlinear operators

Keywords:

[nonlinear Schrödinger equation](#); [a priori estimates](#)

Full Text: [DOI](#) [EuDML](#)

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