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Cauchy problem for the complex Ginzburg-Landau type Equation with L^p -initial data.

(English) [Zbl 1340.35340](#)

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Summary: This paper gives the local existence of mild solutions to the Cauchy problem for the complex Ginzburg-Landau type equation

$$\frac{\partial u}{\partial t} - (\lambda + i\alpha)\Delta u + (\kappa + i\beta)|u|^{q-1}u - \gamma u = 0$$

in $\mathbb{R}^N \times (0, \infty)$ with L^p -initial data u_0 in the subcritical case ($1 \leq q < 1 + 2p/N$), where u is a complex-valued unknown function, $\alpha, \beta, \gamma, \kappa \in \mathbb{R}$, $\lambda > 0$, $p > 1$, $i = \sqrt{-1}$ and $N \in \mathbb{N}$. The proof is based on the L^p - L^q estimates of the linear semigroup $\{\exp(t(\lambda + i\alpha)\Delta)\}$ and usual fixed-point argument.

MSC:

[35Q56](#) Ginzburg-Landau equations

[35A01](#) Existence problems for PDEs: global existence, local existence, non-existence

Cited in **3** Documents

Keywords:

local existence; complex Ginzburg-Landau equation

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