Solvability of the complex Ginzburg-Landau type equation

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We consider the Cauchy problem for the complex Ginzburg-Landau type equation,

$$\text{(CGL)} \qquad \begin{cases} \dfrac{\partial u}{\partial t} - (\lambda + i\alpha)\Delta u + (\kappa + i\beta)|u|^{q-1}u - \gamma u = 0 & \text{on } \mathbb{R}^N \times (0,\infty), \\ u(\cdot, 0) = u_0 & \text{in } \mathbb{R}^N. \end{cases}$$

Here $N \in \mathbb{N}$, $\lambda > 0$, κ, α, β, $\gamma \in \mathbb{R}$, $q > 1$ and u is a complex-valued unknown function. Even if $\kappa \leq 0$, we will discuss the local existence of solutions to (CGL) with L^p-initial data u_0.

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