

Abstract

We construct a solution for the Complex Ginzburg-Landau (CGL) equation in a general critical case, which blows up in finite time T only at one blow-up point. We also give a sharp description of its profile. In the first part, we formally construct a blow-up solution. In the second part we give the rigorous proof. The proof relies on the reduction of the problem to a finite dimensional one, and the use of index theory to conclude. The interpretation of the parameters of the finite dimension problem in terms of the blow-up point and time allows to prove the stability of the constructed solution. We would like to mention that the asymptotic profile of our solution is different from previously known profiles for CGL or for the semilinear heat equation.