

1132-35-146

Wen Feng* (w262f820@ku.edu) and **Milena Ognianova Stanislavova**. *Stability of Vortex solitons for n-dimensional focusing NLS*.

We consider the nolinear Schrödinger equation in n space dimension

$$iu_t + \Delta u + |u|^{p-1}u = 0, \quad x \in \mathbb{R}^n, \quad t > 0$$

and study the existence and stability of standing wave solutions of the form

$$\begin{cases} e^{iwt} e^{i \sum_{j=1}^k m_j \theta_j} \phi_w(r_1, r_2, \dots, r_k), & n = 2k \\ e^{iwt} e^{i \sum_{j=1}^k m_j \theta_j} \phi_w(r_1, r_2, \dots, r_k, z), & n = 2k + 1 \end{cases}$$

for $n = 2k$, (r_j, θ_j) are polar coordinates in \mathbb{R}^2 , $j = 1, 2, \dots, k$; for $n = 2k + 1$, (r_j, θ_j) are polar coordinates in \mathbb{R}^2 , (r_k, θ_k, z) are cylindrical coordinates in \mathbb{R}^3 , $j = 1, 2, \dots, k - 1$. We show the existence of such solutions as minimizers of a constrained functional and use the index theory to conclude that such standing waves for radial perturbation are stable if $1 < p < 1 + 4/n$. (Received July 19, 2017)