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

We consider the nonlinear Schrödinger equation in n space dimension

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

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

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

for $n = 2k$, $(r_j, \theta_j)$ are polar coordinates in $\mathbb{R}^2$, $j = 1, 2, \ldots, k$; for $n = 2k + 1$, $(r_j, \theta_j)$ are polar coordinates in $\mathbb{R}^2$, $(r_k, \theta_k, z)$ are cylindrical coordinates in $\mathbb{R}^3$, $j = 1, 2, \ldots, k - 1$. 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)