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**Rushun Tian\*** ([rushun.tian@aggiemail.usu.edu](mailto:rushun.tian@aggiemail.usu.edu)) and **Zhi-Qiang Wang**. *Multiple Solitary Wave Solutions of Nonlinear Schrödinger Systems*.

We study multiplicity of solitary wave solutions of nonlinear Schrödinger system of equations,

$$\begin{cases} -\Delta U_j + U_j = \mu U_j^3 + \beta U_j \sum_{k \neq j} U_k^2, & \text{in } \Omega, \\ U_j > 0 \text{ in } \Omega, U_j = 0 \text{ on } \partial\Omega, & j = 1, \dots, N, \end{cases}$$

where  $\Omega$  is a smooth and bounded (or unbounded if  $\Omega$  is radially symmetric) domain in  $\mathbb{R}^n$ ,  $n \leq 3$ .

Using index theory, solution orbits with different symmetry are found on different energy levels of the corresponding functional. The parameter  $\beta$  plays an important role in this process, and its value is used to estimate the number of different solution orbits. (Received August 25, 2011)