1125-35-2247 **Daniele Garrisi*** (daniele.garrisi@inha.ac.kr), West Building, Office No. 5W443, Inha University, 253 Yonghyun-Dong, Nam-Gu, Incheon, 402751, South Korea, and **Vladimir Georgiev**, Dipartimento di Matematica, Universita' di Pisa, Largo Bruno Pontecorvo n. 5, 56127 Pisa, Italy. *Non-degeneracy and uniqueness of H^1 symmetric minima for combined power-type non-linearities.*

The orbital stability of standing-wave solutions to the non-linear Schrödinger equation

$$i\partial_t\varphi(t,x) + \Delta_x\varphi(t,x) - G(\varphi(t,x)) = 0$$

follows from properties of the set of minima of the functional

$$E(u) = \frac{1}{2}\int_{\mathbb{R}^n} |\nabla u(x)|^2 dx + \int_{\mathbb{R}^n} G(u(x))dx$$

on the constraint $S = \{u \in H^1_{r,+}(\mathbb{R}^n) \mid \|u\|^2_{L^2} = 1\}$. The functions $H^1_{r,+}(\mathbb{R}^n)$ are radially symmetric (with respect to the origin), H^1 and positive. Stability holds when this set is finite. It is known from Kwong (ARMA, 1989) and Berestycki and Lions (ARMA 1983) that if $G(s) = -a|s|^p$, there is exactly one minimum. We show that this uniqueness holds for combined power-type non-linearities, $G(s) = -a|s|^p + b|s|^q$ and spatial dimension $n = 1$. We also provide a condition on G ensuring that minima of E on S are non-degenerate. As a consequence, there are only finitely many of them. (Received September 20, 2016)