1044-35-98   **Henghui Zou*** (`zou@math.uab.edu`), Department of Mathematics, University of Alabama at Birmingham, Birmingham, AL 35294. *On an Schrödinger Equation involving critical Sobolev exponents and its Quasi-linear Variation.*

We study existence of positive solutions of the quasi-linear elliptic equation

$$-\mathrm{div}(|\nabla u|^{m-2}\nabla u) + V(x)u^{m-1} - f(x,u) - H(x)u^{m^*-1} = 0 \quad \text{in } \mathbf{R}^n$$
$$u \to 0 \quad \text{as } |x| \to \infty$$

where $m \in (1,n)$ is a positive number and

$$m^* := \frac{mn}{n-m} > 0,$$

is the corresponding critical Sobolev embedding number. When $m = 2$, we have the classical Schrödinger equation

$$-\Delta u + V(x)u - f(x,u) - H(x)u^{2^*-1} = 0 \quad \text{in } \mathbf{R}^n$$
$$u \to 0 \quad \text{as } |x| \to \infty.$$

Under appropriate conditions on the function V, f and H, existence and non-existence results of positive solutions have been established. (Received August 25, 2008)

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