1134-35-160 **David G Costa*** (david.costa@unlv.edu). *The sub-supersolution method, a Hopf-type maximum principle and local minimizers for a class of elliptic equations in* $\mathbb{R}^N$.

Our goal is to look for solutions of a class of superlinear elliptic problems in $\mathbb{R}^N$ of the form

$$(P) \qquad -\Delta u = b(x)g(u)\,,\ x \in \mathbb{R}^N\,,$$

where $g : \mathbb{R} \to \mathbb{R}$ is a continuous, subcritical nonlinearity, which is superlinear at $s = 0$. Natural hypotheses are imposed on the weight function $b(x)$ to render the above problem well-defined as a variational problem in the Hilbert space $H := \mathcal{D}^{1,2}(\mathbb{R}^N)$, which is the completion of $C_0^\infty(\mathbb{R}^N)$ under the norm $\|u\| = (\int |\nabla u|^2)^{1/2}$, and with inner product $\langle u, v\rangle = \int \nabla u \cdot \nabla v$.

In fact, the main goal and the novelty of this work is our approach by establishing a Brezis-Nirenberg type result and a Hopf-type maximum principle in the context of the space $\mathcal{D}^{1,2}(\mathbb{R}^N)$. The main ingredients are regularity results and a sub-supersolution method that we develop which are of interest in their own right. This is joint work with S. Carl (Germany) and H. Tehrani (USA). (Received September 02, 2017)