1056-49-1049   **Elena Constantin*** (`constane@pitt.edu`), University of Pittsburgh at Johnstown, Department of Mathematics, Johnstown, PA 15904. *Higher Order Sufficient Conditions for Strict Minimality in Smooth Scalar Optimization.*

We are dealing with the following constrained minimization problem

$$F(\bar{x}) = \text{Local Min } F(x), \quad x \in G^{-1}(0) , \tag{P}$$

where $F : U \to \mathbb{R}$ is of class C^p on the open set $U \subseteq \mathbb{R}^n$, $\bar{x} \in G^{-1}(0) = \{x \in \mathbb{R}^n; G(x) = 0\}$, $G : U \to \mathbb{R}^k$ is of class C^m on U, and p, k, n, m are positive integers.

Our goal is to present some higher order sufficient conditions for $\bar{x}$ to be a strict local minimizer to problem (P). Using our results we analyze some examples for which the second derivative test fails and one where the method of Lagrange multipliers can not be applied. (Received September 20, 2009)