Hassell, Catherine; **Rees, Elmer**
The index of a constrained critical point. (English) Zbl 0803.58012
Am. Math. Mon. 100, No. 8, 772-778 (1993).

Let $M^n \subset \mathbb{R}^{n+m}$ be a smooth submanifold described as the common zero-set of m smooth real-valued functions $g_1, \ldots, g_m$ on $\mathbb{R}^{n+m}$ and let f be a smooth function on $\mathbb{R}^{n+m}$. Defining $L(x, \lambda) = f(x) + \lambda_1 g_1(x) + \cdots + \lambda_m g_m(x)$ for $x \in \mathbb{R}^{n+m}$ and $\lambda = (\lambda_1, \ldots, \lambda_m) \in \mathbb{R}^m$, the authors compare the Hessians of $f\,|_M$ and L for obtaining informations on the nature of critical points of f on M. There are given specific examples.

Reviewer: D.Motreanu (Iaşi)

MSC:

58E05 Abstract critical point theory (Morse theory, Lyusternik-Shnirel'man theory, etc.) in infinite-dimensional spaces
58E50 Applications of variational problems in infinite-dimensional spaces to the sciences

Keywords:

Lagrange multiplier; Hessian; critical points

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