

REMARKS ON UHLENBECK'S PERTURBATION METHOD

GRAȚIELA CICORTAȘ

Abstract. Let f be a C^2 -function on a C^2 -Finsler manifold. Perturb it to $f^\varepsilon = f + \varepsilon g$, $\varepsilon > 0$, $g > 0$ and assume that f^ε satisfies the Palais-Smale condition, for all $\varepsilon > 0$. In [6], K. Uhlenbeck found, under suitable hypotheses, a method to extend the critical point theory from f^ε to f . In this paper we give a variant of this perturbation method.

MSC 2000. 58E05.

Key words. Finsler manifold, critical point, Palais-Smale condition.

REFERENCES

- [1] CHANG, KC., *Infinite dimensional Morse theory and multiple solution problems*, Birkhauser, 1993.
- [2] PALAIS, R.S., *Morse theory on Hilbert manifolds*, *Topology*, **2** (1963), 299–340.
- [3] PALAIS, R.S., *Lusternik-Schnirelmann theory on Banach manifolds*, *Topology*, **5** (1966), 115–132.
- [4] PALAIS, R.S., *Foundations of global non-linear analysis*, W.A. Benjamin, Inc., New York-Amsterdam, 1968.
- [5] UHLENBECK, K., *Morse theory on Banach manifolds*, *J. Funct. Anal.*, **10** (1972), 430–445.
- [6] UHLENBECK, K., *Morse theory by perturbation methods with applications to harmonic maps*, *Trans. AMS*, **267** (1981), 569–583.

Received November 27, 2004

*University of Oradea, Faculty of Sciences
Armatei Române 5
410087 Oradea, Romania
E-mail: cicortas@uoradea.ro*