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Senoussi Guesmia* (senoussi.guesmia@ub.edu.bs), Oakes Field Campus, University of the Bahamas, Nassau, Bahamas, and **Michel Chipot** and **Soumia Harkat**. *Existence of the minimal solution for some elliptic variational inequalities.*

We investigate the existence of the minimal solution to some nonlinear elliptic variational inequalities defined on bounded or unbounded domains. The strict monotonicity that guarantees the uniqueness of the solution and even the coercivity are here violated. Using a regularization technique, by perturbing the concerned inequalities, we construct an approximating family of elliptic variational inequalities defined on large cylindrical domains with new (strictly) monotone operators. When the size of the cylinders becomes unbounded we get our variational inequalities which also means that the minimal solution will be obtained as a limit of the solutions to the perturbed problems. For the unbounded domains case, we apply the same argument to deduce the existence of nonnegative solutions and their minimal solution. Since the summability of the data and solution is not ensured an adaptive definition of the variational inequality and its solution are provided.

This is a joint work with M. Chipot and S. Harkat.

[1] M. Chipot, S. Guesmia and S. Harkat, On the minimal solution for some variational inequalities. (To appear in J. Diff. Equ.) <https://doi.org/10.1016/j.jde.2018.07.052> (Received November 02, 2018)