1096-49-2502 **C. Nahak*** (cnahak@maths.iitkgp.ernet.in), Department of Mathematics, Indian Institute of Technology Kharagpur, Kharagpur, WestBengal 721302, India. *Regularized Gap Function for Optimization Problems in Banach Spaces.*

By using the regularized gap function for variational inequalities, Li and Peng introduced a new penalty function $P_a(x)$ for a constrained minimization problem on R^n. Under certain assumptions, they proved that the original constrained minimization problem is equivalent to unconstrained minimization of $P_a(x)$. Later Li and Nahak gave an in-depth study of those properties of the objective function that can be extended from the feasible set to the whole R^n by $P_a(x)$. The main purpose of this paper is to define $P_a(x)$ on constrained minimization problems on Banach space X and study those properties which can be extended from feasible set to the whole of X. The convexity of the objective function does not imply the convexity of $P_a(x)$ when the objective function is not quadratic, no matter how small a is. Instead, the convexity of the objective function on the feasible set only implies the invexity of $P_a(x)$ on X. Moreover, a characterization for the invexity and pseudo-invexity of $P_a(x)$ is also given. (Received September 17, 2013)