1145-49-2201 **Nabin Kumar Sahu*** (nabin6582@gmail.com). *A system of multivariate variational inequalities and the existence of its solutions in Banach spaces.*

In this paper we study a system of multivariate variational inequalities in a uniformly convex smooth Banach space by using the unique semi-inner product structure equipped in it. We consider the following problem:
Let X be a uniformly convex smooth Banach space with a unique semi-inner product $[.,.]$. Let K be a nonempty closed convex bounded subset of X. Let A_1,A_2,.....,A_N be $N-$variables monotone demi-continuous mappings from K^N into X. We discuss the existence solution of the following system of multivariate variational inequalities:

$$\begin{aligned}
&[A_1(x_1, x_2, ..., x_N),\ y_1 - x_1] \geq 0, \quad \forall y_1 \in K \\
&[A_2(x_1, x_2, ..., x_N),\ y_2 - x_2] \geq 0, \quad \forall y_2 \in K \\
&- \\
&- \\
&[A_N(x_1, x_2, ..., x_N),\ y_N - x_N] \geq 0, \quad \forall y_N \in K
\end{aligned}$$

We also prove that the solutions set of the above system of multivariate variational inequalities is closed convex in K^N. Moreover we show that if $A_1, A_2, ..., A_N$ are strictly monotone, then the above system has a unique solution. (Received September 25, 2018)