1106-46-336 **Ji Gao*** (jgao@ccp.edu), Department of Mathematics, Community College of Philadelphia, Philadelphia, PA 19130, and **Satit Saujung** (saejung@kku.ac.th), 1, Sriayudthaya Road, Bangkok, 10400. *n-Dimensional U-Convexity and Fixed Point for Non-expansive Mappings in Banach Spaces.* Preliminary report.

Definition 1: Let $x \in S_X$ and $\nabla_x \subset S_{X^*}$ be the norm 1 supporting functionals at x. Then

1. $m(x_1, x_2, \ldots, x_{n+1}; f_1, f_2, \ldots, f_n) := \begin{bmatrix} 1 & 1 & \cdots & 1 \\ \langle x_1, f_1\rangle & \langle x_2, f_1\rangle & \cdots & \langle x_{n+1}, f_1\rangle \\ \vdots & \vdots & \ddots & \vdots \\ \langle x_1, f_n\rangle & \langle x_2, f_n\rangle & \cdots & \langle x_{n+1}, f_n\rangle \end{bmatrix}$ where $\{x_1, x_2, \ldots, x_{n+1}\} \subseteq X$, $\{f_1 \in \nabla_{x_1}, f_2 \in \nabla_{x_2}, \ldots, f_n \in \nabla_{x_n}\} \subseteq X^*$ and $n \in \mathbb{N}$, and
2. $v(x_1, x_2, \ldots, x_{n+1}) := \sup\{\det m(x_1, x_2, \ldots, x_{n+1}; f_1, f_2, \ldots, f_n) : f_1 \in \nabla_{x_1}, f_2 \in \nabla_{x_2}, \ldots, f_n \in \nabla_{x_n}\}$.

We introduce the modulus of n-dimensional U-convexity as follows:

Definition 2: Let X be a Banach space. Then

$$\delta^n_{w,X}(\varepsilon) := \inf\{1 - \frac{1}{n+1}\|x_1 + x_2 + \cdots + x_{n+1}\| : x_1, x_2, \ldots x_{n+1} \in S_X, v(x_1, x_2, \ldots, x_{n+1}) \geq \varepsilon\},$$

where $0 \leq \varepsilon \leq 2^n$.

In this talk, we show the relationship between this concept and fixed point of non-expansive mappings and other geometric properties in Banach spaces. (Received August 23, 2014)