

1040-57-82

**Ji Gao\*** (jgao@ccp.edu), Department of Mathematics, Community College of Philadelphia, Philadelphia, PA 19130-3991. *Two Dimensional Norm and Weak Topology, and Geometric Properties In Banach Spaces*. Preliminary report.

Let  $X$  be a Banach space,  $X_2$  be a two dimensional subspace of  $X$ , and  $S(X_2) = \{x \in X_2 : \|x\| \leq 1\}$  be the unit sphere of  $X_2$  respectively.

Let  $A(X_2) = \sup\{\|x + y\| \wedge \|x - y\| : x, y \in S(X_2)\}$ ,  $B(X_2) = \inf\{\|x + y\| \vee \|x - y\| : x, y \in S(X_2)\}$ ,  $J(X) = \sup\{A(X_2)\}$ ,  $j(X) = \inf\{A(X_2)\}$ ,  $G(X) = \sup\{B(X_2)\}$ , and  $g(X) = \inf\{B(X_2)\}$  be moduli of squareness, and  $w(X) = \sup\{\lambda > 0 : \lambda \liminf_{n \rightarrow \infty} \|x_n + x\| \leq \liminf_{n \rightarrow \infty} \|x_n - x\|\}$  be the modulus of w-Compactness where the supremum is taken over all the weakly null sequence  $x_n$  in  $X$  and all the elements  $x$ .

In this talk we show some sufficient conditions for the normal structure under norm and weak topology of a Banach space  $X$  in terms of the moduli of squareness and  $w(X)$ . Some known results in Geometry and Topology including the fixed point property are improved.

(Received January 25, 2008)