STABILITY CONSTANT OF THE WEAK*-FPP FOR DUAL OF SEPARABLE LINDENSTRAUSS SPACE

ROXANA POPESCU

Abstract. Let $X$ be a predual of $\ell_1$ such that $X^*$ has the w*-fpp (see [3]). We introduce two constants:

$$r^*(X) = \inf \{ r > 0 : (\text{ext}(B_{\ell_1}))' \subset rB_{\ell_1} \}$$

$$\gamma^*(X) = \sup \{ \gamma \geq 1 : \text{every } Y^* \text{ has } \sigma(Y^*, Y)\text{-fpp whenever } d(X, Y) \leq \gamma \}.$$ 

It is well-known that if $r^*(X) = 0$, then $X = c_0$ and by results of Soardi [6] and Lim [5] we have $\gamma^*(c_0) = 2$. From Theorem 3.4 in [4] we know that if $r^*(X) = 1$, then $\gamma^*(X) = 1$. Further, if $r^*(X) \in (0, 1)$ then the inequality $\gamma^*(X) \geq \frac{2}{1+r^*(X)}$ follows from the proof of Theorem 3.4 in [4]. We shall prove that if $r^*(X) \in (0, 1)$, then $\gamma^*(X) \leq \frac{2}{1+r^*(X)}$.

References