Some years ago a question of Dolnikov, concerning the Helly dimension of the ”complex crosspolytope”, directed the attention to the problem of determining the Helly dimension of the $L_1$ sum of convex sets. For the direct sum of convex sets, which is the natural operation for the Helly dimension, it is well known that

$$\text{him}(K_1 + K_2 + \cdots + K_n) = \max_i \text{him} K_i.$$ 

It is clear that the Helly dimension of the $L_1$ sum of convex sets is not determined by the Helly dimension of the summands only. In this lecture we give lower and upper bounds for the Helly dimension of the $L_1$ sum of the convex sets $K_1$ and $K_2$:

$$\text{him} K_1 + \text{him} K_2 \leq \text{him} K_1 \oplus K_2,$$

$$\text{him} K_1 \oplus K_2 \leq \min\{(\dim K_1 + 1)(\text{him} K_2 + 1) - 1, (\text{him} K_1 + 1)(\dim K_2 + 1) - 1\},$$

and we discuss the sharpness of these bounds. Finally we apply our results to the problem of determining the Helly dimension of Hanner polytopes.