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Rearrangement Inequality on Positive Tensor Products. Preliminary report.

In 1934, Hardy, Littlewood and Polya introduced their famous inequality:

$$\sum_{i=1}^m a_i b_{(m+1-i)} \leq \sum_{i=1}^m a_i b_{\sigma(i)} \leq \sum_{i=1}^m a_i b_i,$$

in which the real number sequences $(a_i)_i$ and $(b_i)_i$ are in increasing order, and $\sigma(i)$ indicates a random permutation. In 1974, the injective and (respectively) projective tensor products of Banach lattices were investigated by Wittstock and (respectively) Fremlin. And very soon, these tensor products of Banach lattices were proved to be Banach lattices as well. In this talk, I will use a technique introduced by Bu and Buskes in 2006 to show that if $(a_i)_i$ is a sequence in ℓ_p , and $(b_i)_i$ is a sequence in a random Banach lattice X , we can create a similar version of the rearrangement inequality in Wittstock injective tensor product, $\ell_p \tilde{\otimes}_i X$, and Fremlin projective tensor product, $\ell_p \hat{\otimes}_F X$. (Received September 25, 2012)