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David V. Cruz-Uribe* (david.cruzuribe@trincoll.edu), Department of Mathematics, Trinity College, 300 Summit St., Hartford, CT 06106-3100. *Two-weight, Rubio de Francia extrapolation.*

The theory of extrapolation is one of the most surprising results in harmonic analysis: if an operator T is bounded on $L^2(w)$ for all $w \in A_2$, then T is automatically bounded on $L^p(w)$ for any p , $1 < p < \infty$, and every $w \in A_p$.

Attempts have been made to extend this theory to two-weight norm inequalities. We give a new approach, using pairs of weights (u, v) that satisfy the A_p bump conditions: for every cube Q ,

$$\|u^{1/p}\|_{A,Q} \|v^{-1/p}\|_{B,Q} \leq C < \infty,$$

where A, B are Young functions and the norms are the normalized Luxemburg norms on the associated Orlicz spaces.

We show that if for a fixed value p_0 , $T : L^{p_0}(u) \rightarrow L^{p_0}(v)$ whenever (u, v) satisfy a bump condition for fixed Young functions A and B , then for every p , $1 < p < \infty$, we can find new Young functions \tilde{A}, \tilde{B} , depending on A, B, p and p_0 such that $T : L^p(u) \rightarrow L^p(v)$ whenever (u, v) satisfy a bump condition in terms of \tilde{A} and \tilde{B} .

The proof is very technical, but we will sketch the key ideas. If time permits we will discuss applications to various operators. (Received August 14, 2007)