

Washington University in St. Louis

**ENTROPY BUMP CONDITIONS FOR FRACTIONAL  
INTEGRAL OPERATORS**

ROBERT RAHM

ABSTRACT. We investigate weighted norm inequalities for fractional integral operators. In particular, for weights (i.e. non-negative, locally integrable functions)  $w$  and  $\sigma$  we give upper bounds for  $\|T(\sigma) : L^p(\sigma) \rightarrow L^q(w)\|$  in terms of geometric “ $A_p$ -like” conditions with bumps. We approach the problem from a dyadic point of view and dyadic and sparse operators play a central role. Using the innovative framework of “entropy bounds”, introduced by Treil-Volberg, and the techniques developed by Lacey-Spencer, we are able to deduce the weighted inequalities. This is joint work with Scott Spencer.