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*On extremals for a certain convolution operator.*

The operator defined by convolution with the affine arc length measure on the moment curve parametrized by  $h(t) = (t, t^2, \dots, t^d)$  is a bounded operator from  $L^p$  to  $L^q$  if  $(\frac{1}{p}, \frac{1}{q})$  lies on the line segment joining the points  $(\frac{2}{d+1}, \frac{2(d-1)}{d(d+1)})$  and  $(1 - \frac{2(d-1)}{d(d+1)}, 1 - \frac{2}{d+1})$ . We prove that there exist functions which extremize the associated inequality and any extremizing sequence is pre compact modulo the action of the symmetry group when  $(\frac{1}{p}, \frac{1}{q})$  is an interior point. We also establish a relation between extremizers for  $T$  at the end point and the extremizers of the Xray transform restricted to the moment curve. Our proof is based on the ideas of Christ on convolution with the surface measure on the paraboloid. (Received February 06, 2017)