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Tim Ferguson* (tjferg@umich.edu), Department of Mathematics, 2074 East Hall, 530 Church Street, Ann Arbor, MI 48109. *Regularity of Extremal Problems in Bergman Spaces and Extensions of Ryabykh's Theorem.*

We discuss linear extremal problems in the Bergman space A^p of the unit disc for $1 < p < \infty$. Given a functional on the dual space of A^p with representing kernel $k \in A^q$, where $1/p + 1/q = 1$, we discuss how the regularity of k is related to the regularity of the extremal function F . Specifically, we discuss a theorem of Ryabykh and some extensions of this theorem in the case where p is an even integer which relate membership of k in certain Hardy spaces with membership of F in certain Hardy spaces. (Received September 03, 2010)