1067-30-217   **Tim Ferguson*** (`tjferg@umich.edu`), Department of Mathematics, 2074 East Hall, 530 Church Street, Ann Arbor, MI 48109. *Regularity of Solutions to Extremal Problems in Bergman Spaces.*

We discuss linear extremal problems in the Bergman space A^p of the unit disc for $1 < p < \infty$. Given a functional in 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. An early result in this direction is Ryabykh's theorem, which says that if k is in the Hardy space H^q, then F must be in H^p. We will discuss Ryabykh's theorem and indicate some extensions of it that we have found. (Received September 03, 2010)