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*Strange shadows of  $\ell_p$ -balls*

With growing dimension, a typical random projection of the  $\ell_p^n$ -ball onto a subspace of fixed dimension tends to a Euclidean ball of some fixed radius. This is related to the strong law of large numbers of the  $p^*$ -sum of independent and identically distributed line segments, where  $p^*$  is the conjugate index. It is thus not surprising that  $L_{p^*}$ -zonoids appear as shadows and the typical shadow of the  $\ell_p^n$ -ball is close to the above Euclidean ball. We are interested in shadows which are strange, meaning that they occur with probability exponentially decaying with some rate. This is formalized by a large deviations principle in the space of convex bodies equipped with Hausdorff distance in the case of  $p > 2$ . Building on work of Kim and Ramanan, we identify the rate of decay via the entropy of representing measures of the corresponding  $L_{p^*}$ -zonoid. Via duality we obtain a result for random sections. Based on joint work with Zakhar Kabluchko.