

## Sets - Big or Small?

Harry I. Miller

Various gauges of the size of sets of reals are available and relations between them have been studied. For example see Oxtoby, Measure and Category. Also H. Steinhaus (1920) proved  $D(A)$ , the distance set of  $A$ , a subset of the reals, contains an interval if the Lebesgue measure of  $A$  is positive. It is classical that  $N$ , the normal numbers in the unit interval, has measure one, but  $N$  is of the first Baire category. I have shown recently that there exists a set of reals  $S$ , that is concentrated on the rationals (i.e.  $S$  is small) but  $S$  is shift compact (i.e.  $S$  is big). This continues work started in H.I.Miller, A.J.Ostaszewski, Group action and shift-compactness, JMAA, 392 (2012), 23 - 39.