^{n} runs over all the solutions to $^{n}_{i=1}\, x_i^2 = N$, equidistribute on $S^{n\,1}$ for $n > 4$ as N (odd) tends to in nity. The rate of equidistribution poses however a more challenging problem. Due to its Diophantine nature the points inherit a repulsion property, which opposes equidistribution on small sets. Sarnak conjectures that this Diophantine repulsion is the only obstruction to the rate of equidistribution. Using the smooth delta-symbol circle method, developed by Heath-Brown, Sardari was able to show that the conjecture is true for $n > 5$ and recovering Sarnak's progress towards the conjecture for $n = 4$. Building on Sardari's work, Browning, Kumaraswamy, and myself were able to reduce the conjecture to correlation sums of Kloosterman sums of the following type:

$$\sum_{q\ Q} \frac{1}{q} S(m;n;q)\exp(4\ i\ \sqrt{mn}/q).$$

Assuming the twisted Linnik conjecture, which states that the