Fourier theoretic methods in Diophantine approximation

Using Fourier transforms of measures, one can with relatively elementary means obtain results in uniform distribution theory and metric Diophantine approximation. Among these results we find an extension of the result of Pollington and Velani on the Littlewood conjecture, analogous results for the mixed Littlewood conjecture as well as results relating to a conjecture of Cassels, recently resolved by Shapira.

In this talk, we will describe the general approach involved and deduce a number of results from the method, including the above.