1145-00-383 **Rodrigo Banuelos***, Purdue University, West Lafayette, IN. *On the discrete Hilbert transform.*
The discrete Hilbert transform, acting on the space of (doubly infinite) sequences, was introduced by David Hilbert at the beginning of the 20th century. It is the discrete analogue of the continuous Hilbert transform (conjugate function) acting on functions on the real line. In 1925, M. Riesz proved the L^p boundedness, for p larger than one and finite, of the continuous version, thereby solving a problem of considerable interest at the time. From this he deduced the same result for the discrete version. Shortly thereafter, E.C. Titchmarsh turned this around. He gave a direct proof of the boundedness of the discrete Hilbert transform on ℓ^p and from it deduced the same for the continuous version. Further, he showed that the discrete and continuous versions have the same p-norms. Unfortunately, the following year Titchmarsh pointed out that his argument for equality of the norms was incorrect. The problem of equality has been a long-standing conjecture since. In this lecture we describe—taking a historical point of view and avoiding technicalities as much as possible—some tools from probability theory that lead to a proof of this conjecture. The talk is based on joint work with Mateusz Kwasnicki of Wroclaw University, Poland. (Received September 04, 2018)