Title: Sums of roots of unity and polynomials

Ricardo García López

Abstract: Exponential sums are a type of sums of roots of unity which are of importance in number theory, they were already consider by Gauss and Jacobi and appear in many contexts. One of the most relevant problems is to find upper bounds for their complex norm, in the first part of the talk we will survey some results about this problem, arising from a cohomological interpretation of them and Deligne's solution of the Weil conjecture.

In the second part we will focus on the study of their p-adic norm, which is related to the Hodge theory of polynomial maps.