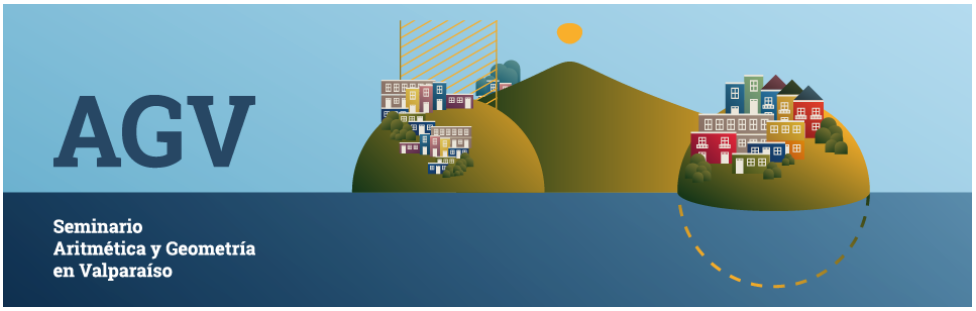

Claus Sorensen
University of California, San Diego

Fecha: Lunes 13 de agosto 2018
Hora: 14:00-15:00
Lugar: IMA PUCV, Sala 2-2

Title: Koszul duality for Iwasawa algebras modulo p

Abstract: Classical Koszul duality relates modules over a symmetric algebra $S(V)$ to modules over the exterior algebra $E(V^*)$. Here V is a finite-dimensional vector space. The relation is an equivalence on the level of derived categories, which extends to other graded algebras. In my talk I will discuss a variant of Koszul duality for certain filtered algebras which arise in number theory. Many compact p-adic Lie groups G admit a well-behaved valuation which endows the mod p completed group ring R ("Iwasawa algebra") with a filtration in such a way that $gr(R) = S(V)$ where V is the Lie algebra of G. This was exploited by Lazard to show R is Noetherian, among other things. It is natural to ask if the filtration on R somehow corresponds to an extra structure on $E(V^*)$. We show that $E(V^*)$ can be promoted to a so-called A-infinity algebra in such a way that $D(R)$ becomes equivalent to the derived category of A-infinity modules over $E(V^*)$. The talk will not assume familiarity with the notion of an A-infinity algebra, which originates in loop space theory. In the case where G is abelian the A-infinity structure can be shown to be trivial and $D(R)$ is equivalent to the differential graded modules over $E(V^*)$; which are very explicit objects. When $\dim(G) = 1$ this recovers a result of Peter Schneider.

http://seminarioaritmeticaygeometria.wordpress.com