

ALGEBRA & NUMBER THEORY DAY
BEN-GURION UNIVERSITY OF THE NEGEV
JUNE 23rd, 2016

Program:

11:30 - 11:40: Opening with Prof. Miriam Cohen, Director of the Center for Advanced Studies in Mathematics
11:40 - 12:40: Ch. Maire, *Infinite extensions of number fields, analytic pro- p groups and fixed points*
12:45 - 13:45: Lunch, offered to all participants *
14:00 - 15:00: E. Matzri, *One sided genus of a central simple algebra*
15:00 - 15:30: Coffee break
15:30 - 16:30: Th. Weigel, *Koszul pro- p groups*

Christian Maire - University of Franche-Comté (Besançon, France)

Title: **Infinite extensions of number fields, analytic pro- p -groups and fixed points**

Abstract: The Fontaine-Mazur Conjecture is one of the most important open problems in Galois representations. Its formulation in the tame case is related to the arithmetic realization of analytic pro- p groups over number fields. In the talk we will present some new results – obtained jointly with F. Hajir (University of Massachusetts) – on the realization of such pro- p groups as Galois groups over number fields, which extend the results obtained by N. Boston in the '90s. The proofs of our results make use of the existence of a “certain” unit of Minkowski in the non-semi-simple case, the Kummer Theory, the Chebotarev Density Theorem and the notion of fixed points for uniform pro- p groups.

Eliyahu Matzri - Bar-Ilan University (Israel)

Title: **One sided genus of a central simple algebra**

Abstract: A recurrent question in the study of central simple algebras is how much structural information is encoded in the commutative subfields of an algebra, or more generally, in its étale subalgebras. To study this, we introduce and study partial orderings on the set of isomorphism classes of central simple algebras as follows: Let A_1, A_2 be central simple algebras over F . We write $A_1 \mathcal{L} A_2$ if every commutative étale subalgebra of A_1 is isomorphic to a subalgebra of A_2 and the

two algebras have equal degree. We consider the following questions: Given a central simple algebra A , what can we say about the collection of algebras B such that $A \mathcal{L} B$? For example, is the set of isomorphism classes of such B finite? And, is the period of B constrained in terms of the period of A ?

Title: Koszul pro- p groups

Thomas Weigel – University of Milano-Bicocca, Milan (Italy)

Abstract: In recent years Koszulity properties have attracted much attention. Originally this notion was introduced by S. Priddy for graded connected associative algebras of finite type. In the talk we will illustrate how it is possible to extend this notion for pro- p groups. Indeed, many prominent examples of pro- p groups are in fact Koszul pro- p groups; e.g., free pro- p groups, uniformly powerful pro- p groups, Demushkin groups, the pro- p completion of right-angled Artin groups, etc. Apart from several recent results for this class of pro- p groups we will also discuss some open problems, which are related to the elementary type conjecture formulated by I. Efrat, and a conjecture formulated by L. Positselski.

Organizers: Claudio Quadrelli, Ido Efrat. Event organized with the support of the Center for Advanced Studies in Mathematics at Ben-Gurion University of the Negev.

* Please communicate the organizers if you wish to attend the lunch: email quadrell@math.bgu.ac.il.