Nivedita Bhaskhar* (nbhaskh@math.ucla.edu). Reduced Whitehead groups of algebras.

Let $A$ be a central simple algebra over a field $K$. Every element in the commutator subgroup $[A^*, A^*]$ has reduced norm 1 and hence lies in $SL_1(A)$. Whether the reverse inclusion holds was formulated as a question in 1943 by Tannaka and Artin in terms of the triviality of the reduced Whitehead group $SK_1(A) := SL_1(A)/[A^*, A^*]$.

Platonov’s well known example of a biquaternion algebra $A$ over $\mathbb{Q}((x))(\mathbb{Q}((y)))$ with non-trivial $SK_1(A)$ negatively settled the Tannaka-Artin question. We note that in this case, the base field has cohomological dimension (cd) 4. In the same paper, the triviality of $SK_1(A)$ was shown for all algebras over cd at most 2 fields.

It is a theorem of Merkurjev/Rost that for central simple algebras of degree 4, the reduced Whitehead group is trivial over cd at most 3 fields, which led Suslin to ask whether the same was true for index $l^2$ algebras for any prime $l$ over cd 3 fields. In this talk, we address this question for $l$ torsion algebras over function fields of p-adic curves where $l$ is any prime not equal to $p$. The proof relies on the techniques of patching as developed by Harbater-Hartmann-Krashen and exploits the arithmetic of these fields to show triviality of the reduced Whitehead group. (Received November 13, 2018)