PLENARY LECTURES

Trace monoids in 1-relator groups

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FT - Auditorium

Abstract.

Given a finite simplicial graph Γ the trace monoid (a.k.a. partially commutative monoid) $T(\Gamma)$ associated to this graph is the monoid generated by the vertices of Γ subject to the relations that two vertices commute if and only if they are adjacent in Γ. A group with the same presentation is called the right angled Artin group $A(\Gamma)$. It is known that $A(\Gamma)$ contains $T(\Gamma)$ as its submonoid of positive words. Trace monoids originated in Computer Science, but more recently they have been used to establish certain undecidability results for 1-relation inverse monoids and groups. On the other hand, right angled Artin groups play an important role in Geometric Group Theory. In a recent work, Foniqi, Gray and Nyberg-Brodda showed that groups containing $T(P_4)$, where P_4 is the path with 4 vertices (of length 3), have undecidable rational subset problem. They also exhibited 1-relator groups containing $A(P_4)$ and asked whether every 1-relator group which has a submonoid isomorphic to $T(P_4)$ must also have a subgroup isomorphic to $A(P_4)$. In my talk I will discuss joint work with Motiejus Valiunas (University of Wroclaw, Poland) showing that the answer to the latter question is positive.