David Torres

Uniform dessins, arithmetical triangle groups, and Bruhat-Tits trees

Abstract A compact Riemann surface of genus $g > 1$ has different uniform dessins d'enfants of the same type if and only if its surface group K is contained in different conjugate Fuchsian triangle groups Δ and $\alpha\Delta\alpha^{-1}$.
In the case when Δ is not arithmetic the possible conjugators are rare and easy to classify. In the arithmetic case the problem is much more complicated, but can be understood through the study of quaternion algebras. Among the tools which are used, the localisation of algebras and the representation of $p-$adic maximal orders as vertices of Bruhat-Tits (or Serre) trees turn out to be crucial.
We will explain briefly the general approach and focus on some examples in low genera, which arise from the uniformization of some classical curves like Klein's quartic and other Macbeath-Hurwitz curves. We will also present some open questions regarding these dessins on which we are currently working.
This talk is based on joint work with Ernesto Girondo and Jürgen Wolfart.