MATRICES AND UNITS IN QUATERNION ALGEBRAS
Capi Corrales Rodrigáñez, Universidad Complutense de Madrid

In this talk we will study the group of units R^* of an order R in a non-split quaternion algebra $\left(\frac{-1,-1}{K}\right)$ with coefficients in a number field K. First we will explain how to study this group, in general, through the action of its elements both on the three dimensional hyperbolic space H^3 and on the quadratic module

$$(K^3, q) = \begin{cases} K^3 = Ki \oplus Kj \oplus Kk, \\ q(ai + bj + ck) = a^2 + b^2 + c^2. \end{cases}$$

Next we will look at the case of imaginary quadratic fields, concentrating on the case $K = \mathbb{Q}(\sqrt{-7})$. This topic has also potential interest for wireless multiantenna communications in terms of space-time code construction.