Non-arithmetic complex hyperbolic lattices

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Lattices in the isometry groups of most symmetric spaces are classified, because they are arithmetic, i.e. up to commensurability, they can be obtained by taking the integer points in a suitable real form of the relevant group group (this is due to celebrated work of Margulis, Corlette, Gromov and Schoen). In the case of the isometry groups of real and complex hyperbolic spaces, non-arithmetic lattices are known to exist, but no classification is known. In the complex hyperbolic case, it is not even clear whether there exist infinitely many commensurability classes of non-arithmetic lattices (apart from complex dimension one, where there are uncountably many commensurability classes).

I will present recent joint work with J. Parker and J. Paupert, that produces a new (finite) class of non-arithmetic lattices in the isometry group of the complex hyperbolic plane.