Covolume, units, regulator

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Abstract

By a result of Zimmert (1981) the regulator of a number field K grows at least exponentially with the degree of K. The regulator is closely related to the (co)volume (of the image via the logarithmic embedding) of the full lattice of units of K. Thus a natural question concerns the (co)volume of subgroups of the group of units. For a one-dimensional subgroup this question turns out to be equivalent to Lehmer's problem on the height of algebraic numbers. Bertrand and Rodriguez-Villegas independently formulate conjectures which interpolate between one dimensional and full dimensional subgroups. We discuss some recent results on these conjectures. This is a joint work with S. David.