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Linear Groups over Rings of Integers

This paper is concerned with an extension of the classical congruence subgroup theorem for the subgroup $SL_n(\mathbb{Z})$, $n \geq 3$.

Theorem: Fix $m \in \mathbb{N}$, and consider the subgroup generated by the matrices $Q_m = \langle I + ml_{ij}, \forall i, j = 1, \dots, n, i \neq j \rangle$. Q_m is of finite index in $SL_n\mathbb{Z}$, and it can be characterised by congruences.

In a second part, we report on some work on the congruence subgroup problem for cocompact groups, in particular for groups in quaternion algebras. This is work in progress.