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Explicit generators of some pro-$p$ groups via Bruhat-Tits theory. (Générateurs explicites de certains sous-groupes pro-$p$ via la théorie de Bruhat-Tits.) (English. French summary)

Summary: Given a semisimple group over a local field of residual characteristic $p$, its topological group of rational points admits maximal pro-$p$ subgroups. The maximal pro-$p$ subgroups of quasisplit simply connected semisimple groups can be described in the combinatorial terms of a valued root groups datum, thanks to the Bruhat-Tits theory. In this context, it becomes possible to compute explicitly a minimal generating set of the (all conjugated) maximal pro-$p$ subgroups thanks to parametrizations of a suitable maximal torus and of the corresponding root groups. We show that the minimal number of generators is then linear with respect to the rank of a suitable root system.

MSC:
20G25 Linear algebraic groups over local fields and their integers
20E18 Limits, profinite groups
20E42 Groups with a $BN$-pair; buildings
20F05 Generators, relations, and presentations of groups
17B22 Root systems

Keywords:
profinite groups; buildings; linear algebraic groups; local fields; finite presentations

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