Title: Infinite index maximal subgroups of $\mathrm{SL}(n,\mathbb{Z})$

Abstract: More than three decades ago Margulis and Soifer proved the existence of maximal subgroups of infinite index in $\Gamma := \mathrm{SL}(n,\mathbb{Z})$, answering a question of Platonov. Since then, it is expected that there should be examples of various different natures. However, as the proof is non-constructive and relies on the axiom of choice, it is highly non-trivial to put the hand on specific properties of the resulting groups. In this talk we will show that indeed, maximal subgroups $\Delta \leq \Gamma$ of different nature do exist. Our main focus is not on the structure of the abstract group Δ but on the associated permutation representation $\Gamma \curvearrowright \Gamma/\Delta$ and on the action of Δ on the associated projective space $\mathbb{P} = \mathbb{P}^{n-1}(\mathbb{R})$. This is joint work with Tsachik Gelander.