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Anna Wienhard* (wienhard@uni-heidelberg.de). *A tale of rigidity and flexibility - discrete subgroups of higher rank Lie groups.*

Discrete subgroups of Lie groups play an important role in various areas of mathematics. Lattices, discrete subgroups of finite covolume, are fairly well understood, revealing a dichotomy of flexibility and rigidity. Lattices in $\mathrm{SL}(2, \mathbb{R})$ are flexible, each such lattice has a deformation space of positive dimension, which is closely related to the Teichmüller space of a surface. Lattices in $\mathrm{SL}(n, \mathbb{R})$ with $n \geq 2$ are super-rigid, due to a celebrated theorem of Margulis. It is rather difficult to get a handle on discrete subgroups which are not lattices. I will discuss new developments in geometry, low-dimensional topology, number theory, analysis and representation theory that led to the discovery of several interesting families of discrete subgroups which are not lattices, but - quite surprisingly - admit an interesting structure theory, which arises from a combination of flexibility and rigidity. A particular exciting aspect is the discovery of higher Teichmüller spaces and their relation to various areas in mathematics, such as analysis, algebraic geometry, geometry, dynamics, representation theory. (Received September 20, 2016)