

# EPFL and ETHZ Number Theory Days

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## Abstracts

### SPECTRAL GAP AND EFFECTIVE EQUIDISTRIBUTION

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The dynamics on homogeneous spaces has many interesting connections to number theory. One of the main problems here is to understand the distribution of closed orbits for subgroups  $H$  of the ambient Lie group  $G$ . In joint work with G. Margulis and A. Venkatesh we prove an error rate in the equidistribution for semisimple subgroups  $H$  acting on congruence quotients of  $G$ . This makes use of spectral gap in the form of property  $(\tau)$ . However, the proof of our theorem can also be used to prove all cases of property  $(\tau)$  except for groups of type  $A_1$ ; this part is ongoing work.

We will discuss the relationship between spectral gap, effective decay of matrix coefficients, and effective equidistribution, as well as the main ideas of our argument.