

Abstract: One of the most fundamental goals in number theory is to understand automorphic L -functions, namely the L -functions attached to automorphic representations of connected reductive groups over number fields. The best known example is the Riemann zeta function. The importance of the subject can be seen from the far-reaching reciprocity and functoriality conjectures of Langlands, according to which all reasonable L -functions arising from Galois representations, arithmetic geometry and harmonic analysis should be automorphic. One of the main tools to study automorphic L -functions is the Arthur-Selberg trace formula. This workshop will focus on questions in harmonic analysis and representation theory that arise in the study of the trace formula. This theme is common to different directions of research on automorphic forms.

The trace formula is used to globalize local representations into global automorphic forms, which has a tremendous number of applications, and is essential in the concept of families where one can study an object by deforming it. The trace formula continues to motivate a wide range of techniques in algebra, e.g. representation theory on p -adic, real and adelic groups, in analysis, and in differential and algebraic geometry. Through the workshop we intend to explore questions motivated by automorphic forms and harmonic analysis, which are not only expected ingredients of proof for problems as above but also interesting in their own right.