DESCRIPTION FOR THE GENERAL PUBLIC

Zeta functions of groups are typically Dirichlet generating functions encoding arithmetic information about infinite groups - or infinite families of groups - and thereby facilitating the application of analytic methods to study the data. Prominent examples are subgroup zeta functions resp. representation zeta functions reflecting the distribution of finite index subgrups resp. irreducible representations of a given group. Significant advances were recently made in understanding representation zeta functions of arithmetic groups, such as the special linear group over the ring of integers of a number field. Reidemeister Nielsen fixed-point-theory is aimed at studying the fixed points of iterated self-maps on connected compact manifolds. Naturally arising relevant invariants, such as the Nielsen and Reidemeister numbers, are encoded by means of suitable zeta functions. In terms of the fundamental group of the manifold, these zeta functions can be seen as dynamical zeta functions of groups equipped with an endomorphism. Significant results include the rationality of such zeta functions and functional equations for certain types of endomorphisms on nilpotent groups. The proposed research is to be carried out via three PhD projects. Our aim is to connect the two areas, viz. zeta functions of groups and dynamical zeta functions in order to obtain fundamental new insights. We will transfer concepts and methods between the two areas in an original way, pioneering substantial connections between the two areas. It is our expectation that this will form a springboard for future cooperations in this direction.