Uniwersytet Szczeciński

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Tytuł rozprawy doktorskiej (**czcionka pogrubiona**): **Dynamiczne zeta funkcje typu Reidemeistera**

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(jeżeli zatwierdzony uchwałą RW)

Streszczenie rozprawy w języku angielskim

The main subject of study in this dissertation is Reidemeister-type zeta functions and their properties.

For automorphisms of infinitely generated torsion-free abelian groups which are subgroups in $\mathbb{Q}^d, d \geqslant 1$, endomorphisms of abelian groups $\mathbb{Z}_p^d, d \geqslant 1$, where $\mathbb{Z}_p^d$ denotes the group of p-adic integers, and for continuous maps of the topological space X into itself, formulas for Reidemeister numbers are derived. Moreover, the Pólya–Carlson dichotomy between rationality and the existence of a natural boundary of the Reidemeister zeta function is proved in these cases.

In the case of the coincidence Reidemeister zeta function of a tame pair of commutative endomorphisms of infinitely generated torsion-free abelian groups which are subgroups in $\mathbb{Q}^d, d \geqslant 1$, the formula for coincidence Reidemeister numbers were derived and the Pólya–Carlson dichotomy was proved.

In the case of a tame pair of finitely generated endomorphisms of torsion-free nilpotent groups, formula for coincidence Reidemeister numbers are obtained and the rationality of the coincidence Reidemeister zeta function is demonstrated.

In addition, the rationality was proved and the functional equation was derived for the representation theory dynamical zeta functions of endomorphisms of finitely generated

abelian groups, endomorphisms of finitely generated torsion-free nilpotent groups, endomorphisms of groups with finite ϕ-irreducible subspaces of the corresponding unitary-dual space, and automorphisms of crystallographic groups with diagonal holonomy $\mathbb{Z}/2\mathbb{Z}$. For periodic automorphisms of a group, the representation theory dynamical zeta function was represented as a finite product of roots of rational functions.

The relationship between the Reidemeister zeta function and the representation theory dynamical zeta function of the endomorphism restricted to a subgroup H of a group G and the endomorphism induced on the quotient group G/N, where N denotes the normal subgroup consisting of nilpotent elements of the group G, is also investigated.

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data, podpis

słowa kluczowe w języku polskim (odpowiedniki słów kluczowych w języku angielskim):

dynamiczne zeta funkcje (dynamical zeta functions), liczby Reidemeistera (Reidemeister numbers), zeta funkcja Reidemeistera (Reidemeister zeta function), dychotomia Pólyi–Carlsona (Pólya–Carlson dichotomy)