Reduced Whitehead groups and conjugacy problem for special unitary groups of anisotropic hermitian forms

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Abstract

For a long time there was a conjecture that reduced Whitehead groups for anisotropic hermitian forms (i.e. factor groups of special unitary groups modulo the commutator subgroup of corresponding unitary ones) have a similar structure as their analogs in an isotropic situation. And only recently the first results were obtained which show that this is not the case. In particular there were given series of examples where the above groups are not only non-trivial but even of infinite exponent. But those examples were constructed for special division algebras. Our main result establishes in general case a link between reduced Whitehead groups of above forms and their isotropic analogs. More precisely, we prove that there exists a surjective homomorphism from reduced Whitehead group for anisotropic hermitian forms to the corresponding reduced Whitehead group for isotropic hermitian forms. This result gives us a lot of information on the structure of groups under our consideration.

We give also a solution of conjugacy problem for special unitary subgroups of anisotropic hermitian forms over quaternion division algebras as subgroups of their multiplicative groups.

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