

CKForms - Manual for version 2.x

Notation and convention

This instruction is used to discuss the functionality associated with the following article Maciej Bochenski, Piotr Jastrzebski, & Aleksy Tralle. (2021). Homogeneous spaces of real simple Lie groups with proper actions of non virtually abelian discrete subgroups: a calculational approach. <https://arxiv.org/abs/2106.05777>

We use the notation of the theory of real Lie algebra from CoReLG Package, (Dietrich, Faccin, and Graaf 2014).

Function for real Lie algebras

`RealRank(g)`

The input is a real Lie algebra \mathfrak{g} (as an Lie algebra object). The output is the real rank of \mathfrak{g} (the dimension of the Cartan subalgebra of \mathfrak{g}).

`AHypRank(g)`

The input is a real Lie algebra \mathfrak{g} (as an Lie algebra object). The output is the a-hyperbolic rank of \mathfrak{g} .

Example:

```
gap> g:=RealFormById("A",5,6);
<Lie algebra of dimension 35 over SqrtField>
gap> NameRealForm(g);
"sl(6,R)"
gap> RealRank(g);
5
gap> AHypRank(g);
3
```

Dietrich, H., P. Faccin, and W. A. de Graaf. 2014. "CoReLG, Computation with Real Lie Groups, Version 1.20." <http://users.monash.edu/~heikod/corelg/>.