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cohomology.gap

Definition of M_G

Let G be a finite subgroup of $\mathrm{GL}(n, \mathbb{Z})$. The G -lattice M_G of rank n is defined to be the G -lattice with a \mathbb{Z} -basis $\{u_1, \dots, u_n\}$ on which G acts by $\sigma(u_i) = \sum_{j=1}^n a_{i,j} u_j$ for any $\sigma = [a_{i,j}] \in G$.

Hminus1

▸ `Hminus1(G)`

returns the Tate cohomology group $\widehat{H}^{-1}(G, M_G)$ for a finite subgroup $G \leq \mathrm{GL}(n, \mathbb{Z})$.

H0

▸ `H0(G)`

returns the Tate cohomology group $\widehat{H}^0(G, M_G)$ for a finite subgroup $G \leq \mathrm{GL}(n, \mathbb{Z})$.

H1

▸ `H1(G)`

returns the cohomology group $H^1(G, M_G)$ for a finite subgroup $G \leq \mathrm{GL}(n, \mathbb{Z})$.

Zminus1

▸ `Zminus1(G)`

returns a \mathbb{Z} -basis of the group of Tate (-1) -cocycles $\widehat{Z}^{-1}(G, M_G)$ for a finite subgroup $G \leq \mathrm{GL}(n, \mathbb{Z})$.

Bminus1

▸ `Bminus1(G)`

returns a \mathbb{Z} -basis of the group of Tate (-1) -coboundaries $\widehat{B}^{-1}(G, M_G)$ for a finite subgroup $G \leq \mathrm{GL}(n, \mathbb{Z})$.

Z0

▸ `Z0(G)`

returns a \mathbb{Z} -basis of the group of Tate 0-cocycles $\widehat{Z}^0(G, M_G)$ for a finite subgroup $G \leq \mathrm{GL}(n, \mathbb{Z})$.

B0

▸ `B0(G)`

returns a \mathbb{Z} -basis of the group of Tate 0-coboundaries $\widehat{B}^0(G, M_G)$ for a finite subgroup $G \leq \mathrm{GL}(n, \mathbb{Z})$.

Z1

▸ `Z1(G)`

returns a \mathbb{Z} -basis of the group of 1-cocycles $Z^1(G, M_G)$ for a finite subgroup $G \leq \mathrm{GL}(n, \mathbb{Z})$.

B1

▸ `B1(G)`

returns a \mathbb{Z} -basis of the group of 1-coboundaries $B^1(G, M_G)$ for a finite subgroup $G \leq \mathrm{GL}(n, \mathbb{Z})$.

IsFlabby

▸ `IsFlabby(G)`

returns whether G -lattice M_G is flabby or not.

IsCoflabby

▸ `IsCoflabby(G)`

returns whether G -lattice M_G is coflabby or not.

References

[HY17] Akinari Hoshi and Aiichi Yamasaki, Rationality problem for algebraic tori, Mem. Amer. Math. Soc. **248** (2017) no. 1176, v+215 pp. [AMS](#) Preprint version: [arXiv:1210.4525](https://arxiv.org/abs/1210.4525).