

- [Return to RatProbAlgTori](#)
- [Return to MultInvField](#)

[caratnumber.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 $G \leq \mathrm{GL}(n, \mathbb{Z})$.

CaratQClass, CaratQClassNumber

▸ `CaratQClass(G)`

▸ `CaratQClassNumber(G)`

returns the Carat ID (\mathbb{Q} -class) of G for a finite subgroup $G \leq \mathrm{GL}(n, \mathbb{Z})$. For Carat ID, see [[HY17](#), Chapter 3].

CaratZClass, CaratZClassNumber

▸ `CaratZClass(G)`

▸ `CaratZClassNumber(G)`

returns the Carat ID (\mathbb{Z} -class) of G for a finite subgroup $G \leq \mathrm{GL}(n, \mathbb{Z})$. For Carat ID, see [[HY17](#), Chapter 3].

CaratMatGroupZClass

▸ `CaratMatGroupZClass(n, i, j)`

returns the group $G \leq \mathrm{GL}(n, \mathbb{Z})$ of the Carat ID (n, i, j) when $1 \leq n \leq 6$.

DirectSumMatrixGroup

▸ `DirectSumMatrixGroup(l)`

returns the direct sum of the groups G_1, \dots, G_n for the list $l = [G_1, \dots, G_n]$.

DirectProductMatrixGroup

▸ `DirectProductMatrixGroup(l)`

returns the direct product of the groups G_1, \dots, G_n for the list $l = [G_1, \dots, G_n]$.

Carat2CrystCat

▸ `Carat2CrystCat(l)`

returns the CrystCat ID of the group G of the Carat ID l . For CrystCat ID and Carat ID, see [[HY17](#), Chapter 3].

CrystCat2Carat

▸ `CrystCat2Carat(l)`

returns the Carat ID of the group G of the CrystCat ID l . For CrystCat ID and Carat ID, see [[HY17](#), Chapter 3].

CrystCatQClass, CrystCatQClassCatalog, CrystCatQClassNumber

▸ `CrystCatQClass(G)`

▸ `CrystCatQClassCatalog(G)`

▸ `CrystCatQClassNumber(G)`

returns the CrystCat ID (\mathbb{Q} -class) of G for a finite subgroup $G \leq \mathrm{GL}(n, \mathbb{Z})$. For CrystCat ID, see [[HY17](#), Chapter 3].

CrystCatZClass, CrystCatZClassCatalog, CrystCatZClassNumber

▸ CrystCatZClass(G)

▸ CrystCatZClassCatalog(G)

▸ CrystCatZClassNumber(G)

returns the CrystCat ID (\mathbb{Z} -class) of G for a finite subgroup $G \leq \mathrm{GL}(n, \mathbb{Z})$.
For CrystCat ID, see [HY17, Chapter 3].

NrQClasses, CaratNrQClasses

▸ NrQClasses(n)

▸ CaratNrQClasses(n)

returns the number of \mathbb{Q} -classes of dimension n when $1 \leq n \leq 6$.

NrZClasses, CaratNrZClasses

▸ NrZClasses(n, i)

▸ CaratNrZClasses(n, i)

returns the number of \mathbb{Z} -classes within Carat ID (\mathbb{Q} -class) (n, i) .

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](#).

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