- Return to RatProbAlgTori
- Return to MultInvField

KS.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 $\{u_1,\ldots,u_n\}$ on which G acts by $\sigma(u_i)=\sum_{j=1}^{n} a_{i,j}u_j$ for any $\sigma=[a_{i,j}]\in G$.

DirectSumMatrixGroup

```
▸ DirectSumMatrixGroup(l)
```

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

DirectProductMatrixGroup

```
▸ DirectProductMatrixGroup(l)
```

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

IndmfMatrixGroup

```
▸ IndmfMatrixGroup(n,i,j)
```

returns $\mathrm{Indmf}(n,i,j)$ of dimension n (this works only for $n\leq 6$).

IndmfNumberQClasses

```
▸ IndmfNumberQClasses(n)
```

returns the number of $\mathbb{Q}$-classes of all the indecomposable maximal finite groups of dimension n (this works only for $n\leq 6$).

IndmfNumberZClasses

```
▸ IndmfNumberZClasses(n,i)
```

returns the number of $\mathbb{Z}$-classes in the i-th $\mathbb{Q}$-class of the indecomposable maximal finite groups $\mathrm{Imf}(n,i,j)$ of dimension n (this works only for $n\leq 6$).

AllImfMatrixGroups

```
▸ AllImfMatrixGroups(n)
```

returns all the irreducible maximal finite groups of dimension n.

AllIndmfMatrixGroups

```
‣ AllIndmfMatrixGroups(n)
```

returns all the indecomposable maximal finite groups of dimension n.

InverseProjection

```
‣ InverseProjection([l1,l2])
```

returns the list of all groups G such that $M_G \simeq M_{G_1} \oplus M_{G_2}$ and the CrystCat ID of G_1 (resp. G_2) is l_1 (resp. l_2).

```
‣ AllIndmfMatrixGroups(n:Carat)
```

returns the same as InverseProjection(*[l1,l2]*) but with respect to the Carat ID l_1 and l_2 instead of the CrystCat ID.

MaximalGroupsID

```
‣ MaximalGroupsID(L)
```

returns the list of the CrystCat IDs of the maximal $\mathbb{Z}$-classes in the groups of the CrystCat IDs L.

```
‣ MaximalGroupsID(L:Carat)
```

returns the same as MaximalGroupsID(*L*) but using the Carat ID instead of the CrystCat ID.

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.