THE COMPUTATION DATA ABOUT ZARISKI PAIRS ON CUBIC SURFACES

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ABSTRACT. We explain the contents of the computation data written in the file "ZPcubic.txt". These data are about the enumeration of Zariski pairs of line arrangements on a cubic surface.

In the text file "ZPcubic.txt", the following data about Zariski pairs of line arrangements on a cubic surface X are presented in GAP format. These data are obtained and used in the preprint

[P] Ichiro Shimada: Zariski pairs on cubic surfaces.

In the following, the notation and terminologies in this preprint are used.

- GramX is the Gram matrix of $H^2(X, \mathbb{Z})$ with respect to the basis

$$h, e_1, \ldots, e_6.$$

  In the following, each element of $H^2(X, \mathbb{Z})$ is expressed as a vector with respect to this basis h, e_1, …, e_6.
- antiK is the class $[-K_X]$ of the anti-canonical line bundle $-K_X$ of X.
- rs is the list $r_1, \ldots, r_6$ of (-2)-vectors in $V := K^\perp$, where $K := \mathbb{Z}[-K_X]$.
- GramV is the Gram matrix of V with respect to the basis $r_1, \ldots, r_6$.
- 27lines is the list $[\ell_1], \ldots, [\ell_{27}]$ of classes of the 27 lines on X. The numbering of the 27 lines is explained in the preprint [P].
- perms is the list of 6 permutations on 27lines induced by the 6 reflections $\sigma_1, \ldots, \sigma_6$ of V with respect to the (-2)-vectors $r_1, \ldots, r_6$.
- WE6orbits consists of 28 lists. For $n = 0, \ldots, 27$, the $(n+1)$st list of WE6orbits is the list of orbits o of the action of $W(E_6)$ on the set $\mathcal{C}_n$ of line arrangements of size n on X. Each orbit o is expressed by the record orb with the following items:
    - no is the number of the orbit o, which is an integer in $\{1, \ldots, 5486\}$.
    - minrep is the minimal representative $[s_1, \ldots, s_n]$ of the orbit o.
    - size is the size $|o|$ of the orbit o.

The Zariski pairs discovered in the preprint [P] are the pair of orbits no. 17 and no. 20, and the pair of orbits no. 39 and no. 51.

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