Computing cup-products in integral cohomology of Hilbert schemes of points on K3 surfaces

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Minor corrections:

Firstly, I would suggest to write the main steps of the algorithm which is behind the source code – that is, give a brief commentary on what the code does. This would help the reader to reproduce it in different computer languages, making the paper more widely applicable.

- pag. 1, in the abstract: in the integral cohomology;
- pag. 1, line 9: please explain a bit more what you mean by "everything explicitly";
- pag. 1, line 10: on a projective K3 surface;
- pag. 1, line 12: the ranks of the cohomology rings become..;
- pag. 1, line 15: replace "some characteristics" with "some properties";
- pag. 1, line -7: is the most interesting;
- pag. 1, line -6: "results" is repeated;
- pag. 2, after Definition 1.1: please clarify which notation for partitions will be adopted in the paper;
- pag. 2, in Definition 1.2: please recall the definition of the monomial and the power sum symmetric functions;
I would leave out of the definition the sentences describing the properties of the two symmetric functions and the example;
- pag. 2, Theorem 1.4.: Two indefinite unimodular lattices...;
- pag. 2, Definition 1.6: here at line -3 it should be $B \otimes B(\Delta(a), b \otimes c)$; in the last line what do you mean by $B(\Delta(1), \Delta(1))$?
- pag. 3, lines 3,4: please provide a reference for both Fogarty and Nakajima result;
- pag. 3, line 6: it seems to me that the degree in the right hand side exponent should be $* + k + 2(l-1)$;
- pag. 3, line 21: "Ones" can be "ones";
- pag. 3, line 22: here should be "If $\sum_{i \geq 0} \|\lambda_i\| > n$, we put.."; the same two lines after;
- pag. 3, proof of Lemma 1.9: here I have problems with both bounds, the lower one seems to be $x^{(k-1)}$ and the upper one $1^{(k+1)}$;

- pag. 3, Definition 1.10, line 1: I would say: "written as a product of disjoint cycles" since the operation is usually multiplicative;
in the definition of $A\{S_n\}$, please explain the notation in the exponent;
"take to permutations π, τ with associated elements of $A\{S_n\}$"?; I found the definition of the map of cycles hard to follow, please provide the formula for it;
- pag. 4, Remark 1.14: please provide more details here; is the inequality in the second line correct?
- pag. 4, Example 1.15: is it possible to perform these computations by hand in a short time? If not, please explain how to compute them by means of the provided code;
- pag. 5, line 7: with respect to the integral basis of...;
- pag. 5, line 8: please replace "Both was done" with "Both results have been obtained";
- pag. 5, Remark 2.1: the rank of $h^6(S^{[n]})$ should be 2300;
- pag. 5, Proposition 2.4: the rank of the second quotient seems to be 254 instead of 507;
add "Moreover" before giving the last two quotients;
add punctuation marks where needed;
please provide some more details or reference in the proof.
- pag. 6, Proposition 2.5: replace "parts" by "summands" or "factors";
- pag. 6, proof of Proposition 2.5: Lemma 1.9 as stated says that $\|\nu\| \geq 3$;
coefficients; matrix;
- pag. 6, line -4: a unimodular lattice;
- Bibliography: reference 1 page numbers incorrect; pages and number are missing in reference 2.