TATE COHOMOLOGY OF THE ANTI-INVOLUTION OF THE STEENROD ALGEBRA
VERSION OF (2008-03-22 07:35)

ROBERT R. BRUNER

Abstract. A MAGMA calculation

1. The result

This is a calculation by brute force of the Tate cohomology of the cyclic group of order 2 with coefficients in the mod 2 Steenrod algebra with the canonical involution as the C_2 action; the generators are complete through degree 225 and the relations are complete through degree 200.

There are generators $a_{2^n-2} = \xi_{n-1}\chi(\xi_{n-1})$ and a_{2^n+1} as found by Crossley and Whitehouse [CW]. (They called them (more sensibly) a_{n-1} and d_n, respectively.) In addition we find generators in degrees

$$49 := 32 + 17$$

$$81 := 64 + 17$$
$$97 := 64 + 33$$

$$145 := 128 + 17$$
$$161 := 128 + 33$$
$$193 := 128 + 65$$
$$225 := 128 + 97$$

Note that the generators of the Tate cohomology do not suffice to generate the fixed points. The first counterexample to this lies in degree 22, where the norm $(1 + \chi)(\xi_3\xi_4)$ is fixed but cannot be written in terms of lifts of the generators of the Tate cohomology.

The relations are calculated by computing a Gröbner basis for the ideal generated by the relations in degrees up to 200. It appears that the generators other than those in degrees $2^n - 2$ all satisfy $x^3 = 0$. This is verified for a_1, a_9, a_{17}, a_{33}, a_{49}, a_{65}, a_{81}, and a_{97}.

There are also suggestive patterns in the powers of the $a_{2^n-2} = \xi_{n-1}\chi(\xi_{n-1})$. We have $a_6^3 = a_9^2$ and $a_{14}^7 = a_{49}^2$, and we conjecture that $a_{30}^{15} = a_{225}^2$, and more generally, that $a_{2^{n+1}-2}^{2^n-1} = a_{(2^n-1)^2}^2$, which requires that there be generators a_{225}, $a_{(31)^2}$, ...

Ring generators through degree 225:

$$a_1 := \xi_1$$

$$a_6 := \xi_1^3\xi_2 + \xi_2^2$$

$$a_9 := \xi_1^2\xi_3 + \xi_2^3$$

$$a_{14} := \xi_1^7\xi_3 + \xi_1^4\xi_2\xi_3 + \xi_1\xi_2^2\xi_3 + \xi_3^2$$

1991 *Mathematics Subject Classification.* Primary: ; Secondary:

Sarah Whitehouse and Martin Crossley caught a silly error in the first version of this calculation: I was only calculating the relations in the Steenrod algebra not modulo norms.

$$a_{17} := \xi_1^4\xi_2^2\xi_3 + \xi_1^2\xi_2^5 + \xi_1^2\xi_4 + \xi_2\xi_3^2$$

$$a_{30} := \xi_1^{15}\xi_4 + \xi_1^{12}\xi_2\xi_4 + \xi_1^9\xi_2^2\xi_4 + \xi_1^8\xi_3\xi_4 + \xi_1^3\xi_2^4\xi_4 + \xi_1\xi_3^2\xi_4 + \xi_2^5\xi_4 + \xi_4^2$$

$$a_{33} := \xi_1^8\xi_2^6\xi_3 + \xi_1^6\xi_2^9 + \xi_1^6\xi_2^4\xi_4 + \xi_1^4\xi_2^5\xi_3^2 + \xi_1^4\xi_3^2\xi_4 + \xi_1^2\xi_2\xi_3^4 + \xi_1^2\xi_5 + \xi_2^6\xi_4 + \xi_2^4\xi_3^3 + \xi_2\xi_4^2$$

$$a_{49} := \xi_1^4\xi_3^2\xi_5 + \xi_1^4\xi_4^3 + \xi_2^6\xi_5 + \xi_2^4\xi_3\xi_4^2 + \xi_2^2\xi_3^4\xi_4 + \xi_3^7$$

$$a_{62} := \xi_1^{31}\xi_5 + \xi_1^{28}\xi_2\xi_5 + \xi_1^{25}\xi_2^2\xi_5 + \xi_1^{24}\xi_3\xi_5 + \xi_1^{19}\xi_2^4\xi_5 + \xi_1^{17}\xi_3^2\xi_5 + \xi_1^{16}\xi_2^5\xi_5 + \xi_1^{16}\xi_4\xi_5 + \xi_1^7\xi_2^8\xi_5 + \xi_1^4\xi_2^9\xi_5 + \xi_1^3\xi_3^4\xi_5 + \xi_1\xi_2^{10}\xi_5 + \xi_1\xi_4^2\xi_5 + \xi_2^8\xi_3\xi_5 + \xi_2\xi_3^4\xi_5 + \xi_5^2$$

$$a_{65} := \xi_1^{16}\xi_2^{14}\xi_3 + \xi_1^{14}\xi_2^{17} + \xi_1^{14}\xi_2^{12}\xi_4 + \xi_1^{12}\xi_2^{13}\xi_3^2 + \xi_1^{12}\xi_2^8\xi_3^2\xi_4 + \xi_1^{10}\xi_2^9\xi_3^4 + \xi_1^{10}\xi_2^8\xi_5 + \xi_1^8\xi_2^{14}\xi_4 + \xi_1^8\xi_2^{12}\xi_3^3 + \xi_1^8\xi_2^9\xi_4^2 + \xi_1^8\xi_2^4\xi_3^2\xi_5 + \xi_1^8\xi_2^4\xi_4^3 + \xi_1^8\xi_2^2\xi_3^3\xi_4^2 + \xi_1^6\xi_2^5\xi_3^2\xi_4^2 + \xi_1^6\xi_3^2\xi_4^3 + \xi_1^4\xi_2^{10}\xi_5 + \xi_1^4\xi_2^6\xi_3^4\xi_4 + \xi_1^4\xi_2\xi_3^4\xi_4^2 + \xi_1^4\xi_4^2\xi_5 + \xi_1^2\xi_2^{11}\xi_4^2 + \xi_1^2\xi_2^7\xi_3^6 + \xi_1^2\xi_2^6\xi_4^3 + \xi_1^2\xi_2^2\xi_3^6\xi_4 + \xi_1^2\xi_2\xi_4^4 + \xi_1^2\xi_6 + \xi_2^7\xi_3^2\xi_4^2 + \xi_2^3\xi_3^8 + \xi_2^2\xi_3^4\xi_5 + \xi_2\xi_5^2 + \xi_3^5\xi_4^2$$

$$a_{81} := \xi_1^{12}\xi_2^8\xi_3^2\xi_5 + \xi_1^{12}\xi_2^8\xi_4^3 + \xi_1^8\xi_2^{14}\xi_5 + \xi_1^8\xi_2^{12}\xi_3\xi_4^2 + \xi_1^8\xi_2^{10}\xi_3^4\xi_4 + \xi_1^8\xi_2^8\xi_3^7 + \xi_1^4\xi_3^2\xi_6 + \xi_1^4\xi_4\xi_5^2 + \xi_2^6\xi_6 + \xi_2^4\xi_3\xi_5^2 + \xi_2^2\xi_4^5 + \xi_3^3\xi_4^4$$

$$a_{97} := \xi_1^8\xi_2^4\xi_3^2\xi_6 + \xi_1^8\xi_2^4\xi_4\xi_5^2 + \xi_1^8\xi_3^4\xi_4^2\xi_5 + \xi_1^8\xi_3^2\xi_4^5 + \xi_1^4\xi_2^{10}\xi_6 + \xi_1^4\xi_2^8\xi_3\xi_5^2 + \xi_1^4\xi_2^2\xi_3^8\xi_5 + \xi_1^4\xi_3^9\xi_4^2 + \xi_1^4\xi_4^2\xi_6 + \xi_1^4\xi_5^3 + \xi_2^{12}\xi_4^2\xi_5 + \xi_2^{10}\xi_3\xi_4^4 + \xi_2^8\xi_3^6\xi_5 + \xi_2^8\xi_3^4\xi_4^3 + \xi_2^4\xi_3^{10}\xi_4 + \xi_2^2\xi_3^{13} + \xi_2^2\xi_3^4\xi_6 + \xi_2^2\xi_4^4\xi_5 + \xi_3^5\xi_5^2 + \xi_3\xi_4^6$$

$$a_{126} := \xi_1^{63}\xi_6 + \xi_1^{60}\xi_2\xi_6 + \xi_1^{57}\xi_2^2\xi_6 + \xi_1^{56}\xi_3\xi_6 + \xi_1^{51}\xi_2^4\xi_6 + \xi_1^{49}\xi_3^2\xi_6 + \xi_1^{48}\xi_2^5\xi_6 + \xi_1^{48}\xi_4\xi_6 + \xi_1^{39}\xi_2^8\xi_6 + \xi_1^{36}\xi_2^9\xi_6 + \xi_1^{35}\xi_3^4\xi_6 + \xi_1^{33}\xi_2^{10}\xi_6 + \xi_1^{33}\xi_4^2\xi_6 + \xi_1^{32}\xi_2^8\xi_3\xi_6 + \xi_1^{32}\xi_2\xi_3^4\xi_6 + \xi_1^{32}\xi_5\xi_6 + \xi_1^{15}\xi_2^{16}\xi_6 + \xi_1^{12}\xi_2^{17}\xi_6 + \xi_1^9\xi_2^{18}\xi_6 + \xi_1^8\xi_2^{16}\xi_3\xi_6 + \xi_1^7\xi_3^8\xi_6 + \xi_1^4\xi_2\xi_3^8\xi_6 + \xi_1^3\xi_2^{20}\xi_6 + \xi_1^3\xi_4^4\xi_6 + \xi_1\xi_2^{16}\xi_3^2\xi_6 + \xi_1\xi_2^2\xi_3^8\xi_6 + \xi_1\xi_5^2\xi_6 + \xi_2^{21}\xi_6 + \xi_2^{16}\xi_4\xi_6 + \xi_2\xi_4^4\xi_6 + \xi_3^9\xi_6 + \xi_6^2$$

$$a_{129} := \xi_1^{32}\xi_2^{30}\xi_3 + \xi_1^{30}\xi_2^{33} + \xi_1^{30}\xi_2^{28}\xi_4 + \xi_1^{28}\xi_2^{29}\xi_3^2 + \xi_1^{28}\xi_2^{24}\xi_3^2\xi_4 + \xi_1^{26}\xi_2^{25}\xi_3^4 + \xi_1^{26}\xi_2^{24}\xi_5 + \xi_1^{24}\xi_2^{30}\xi_4 + \xi_1^{24}\xi_2^{28}\xi_3^3 + \xi_1^{24}\xi_2^{25}\xi_4^2 + \xi_1^{24}\xi_2^{20}\xi_3^2\xi_5 + \xi_1^{24}\xi_2^{20}\xi_4^3 + \xi_1^{24}\xi_2^{18}\xi_3^3\xi_4^2 + \xi_1^{22}\xi_2^{21}\xi_3^2\xi_4^2 + \xi_1^{22}\xi_2^{16}\xi_3^2\xi_4^3 + \xi_1^{20}\xi_2^{26}\xi_5 + \xi_1^{20}\xi_2^{22}\xi_3^4\xi_4 + \xi_1^{20}\xi_2^{17}\xi_3^4\xi_4^2 + \xi_1^{20}\xi_2^{16}\xi_4^2\xi_5 + \xi_1^{18}\xi_2^{27}\xi_4^2 + \xi_1^{18}\xi_2^{23}\xi_3^6 + \xi_1^{18}\xi_2^{22}\xi_4^3 + \xi_1^{18}\xi_2^{18}\xi_3^6\xi_4 + \xi_1^{18}\xi_2^{17}\xi_4^4 + \xi_1^{18}\xi_2^{16}\xi_6 + \xi_1^{16}\xi_2^{23}\xi_3^2\xi_4^2 + \xi_1^{16}\xi_2^{19}\xi_3^8 + \xi_1^{16}\xi_2^{18}\xi_3^4\xi_5 + \xi_1^{16}\xi_2^{17}\xi_5^2 + \xi_1^{16}\xi_2^{16}\xi_3^5\xi_4^2 + \xi_1^{16}\xi_2^{12}\xi_3^2\xi_6 + \xi_1^{16}\xi_2^{12}\xi_4\xi_5^2 + \xi_1^{16}\xi_2^8\xi_3^4\xi_4^2\xi_5 + \xi_1^{16}\xi_2^8\xi_3^2\xi_4^5 + \xi_1^{16}\xi_2^6\xi_3^5\xi_4^4 + \xi_1^{14}\xi_2^9\xi_3^4\xi_4^4 + \xi_1^{14}\xi_2^4\xi_3^4\xi_4^5 + \xi_1^{12}\xi_2^{18}\xi_6 + \xi_1^{12}\xi_2^{16}\xi_3\xi_5^2 + \xi_1^{12}\xi_2^{10}\xi_3^8\xi_5 + \xi_1^{12}\xi_2^8\xi_3^9\xi_4^2 + \xi_1^{12}\xi_2^8\xi_4^2\xi_6 + \xi_1^{12}\xi_2^8\xi_5^3 + \xi_1^{12}\xi_2^5\xi_3^6\xi_4^4 + \xi_1^{12}\xi_3^6\xi_4^5 + \xi_1^{10}\xi_2\xi_3^8\xi_4^4 + \xi_1^{10}\xi_3^4\xi_4^4\xi_5 + \xi_1^8\xi_2^{20}\xi_4^2\xi_5 + \xi_1^8\xi_2^{16}\xi_3^6\xi_5 + \xi_1^8\xi_2^{16}\xi_3^4\xi_4^3 + \xi_1^8\xi_2^{12}\xi_3^{10}\xi_4 + \xi_1^8\xi_2^{10}\xi_3^4\xi_6 + \xi_1^8\xi_2^{10}\xi_4^4\xi_5 + \xi_1^8\xi_2^8\xi_3^5\xi_5^2 + \xi_1^8\xi_2^8\xi_3\xi_4^6 + \xi_1^8\xi_2^6\xi_3^4\xi_4^5 + \xi_1^8\xi_2^4\xi_3^7\xi_4^4 + \xi_1^8\xi_2^2\xi_3^3\xi_5\xi_6 + \xi_1^8\xi_2^2\xi_3\xi_4^3\xi_6 + \xi_1^8\xi_2^2\xi_3\xi_4\xi_5^3 + \xi_1^8\xi_2\xi_3^4\xi_4^6 + \xi_1^8\xi_3^4\xi_4^2\xi_6 + \xi_1^8\xi_3^2\xi_4^3\xi_5^2 + \xi_1^6\xi_2^{21}\xi_4^4 + \xi_1^6\xi_2^{16}\xi_4^5 + \xi_1^6\xi_2^{13}\xi_3^{12} + \xi_1^6\xi_2^8\xi_3^{12}\xi_4 + \xi_1^6\xi_2^5\xi_3^2\xi_5\xi_6 + \xi_1^6\xi_2^5\xi_4^3\xi_6 + \xi_1^6\xi_2^5\xi_4\xi_5^3 + \xi_1^6\xi_3^2\xi_4\xi_5\xi_6 + \xi_1^6\xi_4^4\xi_6 + \xi_1^6\xi_4^2\xi_5^3 + \xi_1^4\xi_2^{17}\xi_3^2\xi_4^4 + \xi_1^4\xi_2^{12}\xi_3^2\xi_4^5 + \xi_1^4\xi_2^9\xi_3^{14} + \xi_1^4\xi_2^8\xi_3\xi_5\xi_6 + \xi_1^4\xi_2^6\xi_3^2\xi_4^2\xi_6 + \xi_1^4\xi_2^6\xi_3^2\xi_5^3 + \xi_1^4\xi_2^6\xi_4^3\xi_5^2 + \xi_1^4\xi_2^4\xi_3^{14}\xi_4 + \xi_1^4\xi_2^4\xi_3^5\xi_4\xi_6 + \xi_1^4\xi_2^4\xi_3\xi_4^5\xi_5 + \xi_1^4\xi_2^2\xi_3^4\xi_4^4\xi_5 + \xi_1^4\xi_2\xi_3^4\xi_5\xi_6 + \xi_1^4\xi_2\xi_3^2\xi_4^3\xi_6 + \xi_1^4\xi_2\xi_3^2\xi_4\xi_5^3 + \xi_1^4\xi_3^5\xi_4^6 + \xi_1^4\xi_5^2\xi_6 + \xi_1^2\xi_2^{13}\xi_3^4\xi_4^4 + \xi_1^2\xi_2^{12}\xi_4^4\xi_5 + \xi_1^2\xi_2^{11}\xi_5\xi_6 + \xi_1^2\xi_2^9\xi_3\xi_4^2\xi_6 + \xi_1^2\xi_2^9\xi_3\xi_5^3 + \xi_1^2\xi_2^7\xi_3^4\xi_4\xi_6 + \xi_1^2\xi_2^7\xi_3^2\xi_4^2\xi_5^2 + \xi_1^2\xi_2^7\xi_4^5\xi_5 + \xi_1^2\xi_2^6\xi_4\xi_5\xi_6 + \xi_1^2\xi_2^5\xi_3^{16} + \xi_1^2\xi_2^5\xi_3^7\xi_6 + \xi_1^2\xi_2^5\xi_3^5\xi_4\xi_5^2 + \xi_1^2\xi_2^5\xi_3^3\xi_4^4\xi_5 + \xi_1^2\xi_2^5\xi_3\xi_4^7 + \xi_1^2\xi_2^4\xi_3^{12}\xi_5 + \xi_1^2\xi_2^4\xi_3\xi_4^3\xi_6 + \xi_1^2\xi_2^4\xi_3\xi_4\xi_5^3 + \xi_1^2\xi_2^2\xi_3^4\xi_4^2\xi_6 + \xi_1^2\xi_2^2\xi_3^2\xi_4^3\xi_5^2 + \xi_1^2\xi_2^2\xi_4^6\xi_5 + \xi_1^2\xi_2\xi_5^4 + \xi_1^2\xi_3^7\xi_4\xi_6 + \xi_1^2\xi_3^5\xi_4^2\xi_5^2 + \xi_1^2\xi_3^3\xi_4^5\xi_5 + \xi_1^2\xi_3\xi_4^8 + \xi_1^2\xi_7 + \xi_2^{18}\xi_4^5 + \xi_2^{16}\xi_3^3\xi_4^4 + \xi_2^{13}\xi_4^6 + \xi_2^{12}\xi_4^2\xi_6 + \xi_2^{10}\xi_3^{12}\xi_4 + \xi_2^{10}\xi_3\xi_4^2\xi_5^2 + \xi_2^8\xi_3^{15} + \xi_2^8\xi_3^6\xi_6 + \xi_2^8\xi_4^7 + \xi_2^7\xi_3^2\xi_5\xi_6 + \xi_2^6\xi_3^7\xi_5^2 + \xi_2^6\xi_3^3\xi_4^6 + \xi_2^5\xi_3^{12}\xi_4^2 + \xi_2^5\xi_3^3\xi_4^2\xi_6 + \xi_2^5\xi_3^3\xi_5^3 + \xi_2^4\xi_3^6\xi_4^5 + \xi_2^3\xi_3^6\xi_4\xi_6 + \xi_2^3\xi_3^4\xi_4^2\xi_5^2 + \xi_2^3\xi_3^2\xi_4^5\xi_5 + \xi_2^2\xi_3^9\xi_4^4 + \xi_2^2\xi_4^4\xi_6 + \xi_2\xi_3^9\xi_6 + \xi_2\xi_3^7\xi_4\xi_5^2 + \xi_2\xi_3^5\xi_4^4\xi_5 + \xi_2\xi_3^3\xi_4^7 + \xi_2\xi_6^2 + \xi_3\xi_4^4\xi_5^2$$

$$a_{145} := \xi_1^{28}\xi_2^{24}\xi_3^2\xi_5 + \xi_1^{28}\xi_2^{24}\xi_4^3 + \xi_1^{24}\xi_2^{30}\xi_5 + \xi_1^{24}\xi_2^{28}\xi_3\xi_4^2 + \xi_1^{24}\xi_2^{26}\xi_3^4\xi_4 + \xi_1^{24}\xi_2^{24}\xi_3^7 + \xi_1^{20}\xi_2^{16}\xi_3^2\xi_6 + \xi_1^{20}\xi_2^{16}\xi_4\xi_5^2 + \xi_1^{16}\xi_2^{22}\xi_6 + \xi_1^{16}\xi_2^{20}\xi_3\xi_5^2 + \xi_1^{16}\xi_2^{18}\xi_4^5 + \xi_1^{16}\xi_2^{16}\xi_3^3\xi_4^4 + \xi_1^{12}\xi_3^6\xi_4^4\xi_5 + \xi_1^{12}\xi_3^4\xi_4^7 + \xi_1^8\xi_2^6\xi_3^4\xi_4^4\xi_5 + \xi_1^8\xi_2^4\xi_3^5\xi_4^6 + \xi_1^8\xi_2^2\xi_3^8\xi_4^5 + \xi_1^8\xi_3^{11}\xi_4^4 + \xi_1^4\xi_2^{12}\xi_3^2\xi_4^4\xi_5 + \xi_1^4\xi_2^{12}\xi_4^7 + \xi_1^4\xi_2^4\xi_3^{14}\xi_5 + \xi_1^4\xi_2^4\xi_3^{12}\xi_4^3 + \xi_1^4\xi_3^2\xi_7 + \xi_1^4\xi_4\xi_6^2 + \xi_2^{18}\xi_4^4\xi_5 + \xi_2^{16}\xi_3\xi_4^6 + \xi_2^{14}\xi_3^4\xi_4^5 + \xi_2^{12}\xi_3^7\xi_4^4 + \xi_2^{10}\xi_3^{12}\xi_5 + \xi_2^8\xi_3^{13}\xi_4^2 + \xi_2^6\xi_3^{16}\xi_4 + \xi_2^6\xi_7 + \xi_2^4\xi_3^{19} + \xi_2^4\xi_3\xi_6^2 + \xi_2^2\xi_4\xi_5^4 + \xi_3^3\xi_5^4$$

$$a_{161} := \xi_1^{24}\xi_2^{20}\xi_3^2\xi_6 + \xi_1^{24}\xi_2^{20}\xi_4\xi_5^2 + \xi_1^{24}\xi_2^{14}\xi_3^7\xi_4\xi_5 + \xi_1^{24}\xi_2^{10}\xi_3^{11}\xi_4^2 + \xi_1^{24}\xi_2^6\xi_3^2\xi_4^7 + \xi_1^{24}\xi_2^4\xi_3^7\xi_4^3\xi_5 + \xi_1^{24}\xi_2^4\xi_5^2\xi_6 + \xi_1^{24}\xi_2^2\xi_3^{10}\xi_4^2\xi_5 + \xi_1^{24}\xi_3^{11}\xi_4^4 + \xi_1^{24}\xi_3^2\xi_4^2\xi_5^3 + \xi_1^{22}\xi_2^{17}\xi_3^6\xi_4\xi_5 + \xi_1^{22}\xi_2^{15}\xi_3^9\xi_5 + \xi_1^{22}\xi_2^{15}\xi_3^7\xi_4^3 + \xi_1^{22}\xi_2^{13}\xi_3^{10}\xi_4^2 + \xi_1^{22}\xi_2^{12}\xi_3^6\xi_4^2\xi_5 + \xi_1^{22}\xi_2^{10}\xi_3^9\xi_4\xi_5 + \xi_1^{22}\xi_2^{10}\xi_3^7\xi_4^4 + \xi_1^{22}\xi_2^8\xi_3^{10}\xi_4^3 + \xi_1^{22}\xi_2^7\xi_3^6\xi_4^3\xi_5 + \xi_1^{22}\xi_2^7\xi_3^4\xi_4^6 + \xi_1^{22}\xi_2^5\xi_3^9\xi_4^2\xi_5 + \xi_1^{22}\xi_2^5\xi_3^7\xi_4^5 + \xi_1^{22}\xi_2^5\xi_5^4 + \xi_1^{22}\xi_2^4\xi_7 + \xi_1^{22}\xi_2^2\xi_3^6\xi_4^4\xi_5 + \xi_1^{22}\xi_2^2\xi_3^4\xi_4^7 + \xi_1^{22}\xi_2\xi_3^2\xi_4^4\xi_5^2 + \xi_1^{22}\xi_3^9\xi_4^3\xi_5 + \xi_1^{22}\xi_3^7\xi_4^6 + \xi_1^{22}\xi_3^2\xi_5^2\xi_6 + \xi_1^{20}\xi_2^{26}\xi_6 + \xi_1^{20}\xi_2^{24}\xi_3\xi_5^2 + \xi_1^{20}\xi_2^{22}\xi_4^5 + \xi_1^{20}\xi_2^{20}\xi_3^5\xi_4\xi_5 + \xi_1^{20}\xi_2^{20}\xi_3^3\xi_4^4 + \xi_1^{20}\xi_2^{18}\xi_3^6\xi_4^3 + \xi_1^{20}\xi_2^{16}\xi_4^2\xi_6 + \xi_1^{20}\xi_2^{16}\xi_5^3 + \xi_1^{20}\xi_2^{14}\xi_3^{12}\xi_4 + \xi_1^{20}\xi_2^{13}\xi_3^8\xi_4\xi_5 + \xi_1^{20}\xi_2^{12}\xi_3^{15} + \xi_1^{20}\xi_2^{12}\xi_3^2\xi_4^4\xi_5 + \xi_1^{20}\xi_2^{11}\xi_3^{11}\xi_5 + \xi_1^{20}\xi_2^{11}\xi_3^9\xi_4^3 + \xi_1^{20}\xi_2^{10}\xi_3^7\xi_5^2 + \xi_1^{20}\xi_2^{10}\xi_3^3\xi_4^6 + \xi_1^{20}\xi_2^9\xi_3^{12}\xi_4^2 +$$

$\xi_1^{20}\xi_2^8\xi_3^8\xi_4^2\xi_5 + \xi_1^{20}\xi_2^8\xi_3^6\xi_4^5 + \xi_1^{20}\xi_2^6\xi_3^{11}\xi_4\xi_5 + \xi_1^{20}\xi_2^6\xi_3^9\xi_4^4 + \xi_1^{20}\xi_2^5\xi_6^2 + \xi_1^{20}\xi_2^4\xi_3^{14}\xi_5 + \xi_1^{20}\xi_2^4\xi_3\xi_4^4\xi_5^2 + \xi_1^{20}\xi_2^3\xi_3^8\xi_4^3\xi_5 +$
$\xi_1^{20}\xi_2^3\xi_3^6\xi_4^6 + \xi_1^{20}\xi_2\xi_3^{11}\xi_4^2\xi_5 + \xi_1^{20}\xi_2\xi_3^9\xi_4^5 + \xi_1^{20}\xi_2\xi_3^2\xi_5^4 + \xi_1^{20}\xi_3^7\xi_4^2\xi_5^2 + \xi_1^{18}\xi_2^{23}\xi_3^4\xi_4\xi_5 + \xi_1^{18}\xi_2^{21}\xi_3^7\xi_5 + \xi_1^{18}\xi_2^{21}\xi_3^5\xi_4^3 +$
$\xi_1^{18}\xi_2^{19}\xi_3^8\xi_4^2 + \xi_1^{18}\xi_2^{18}\xi_3^4\xi_4^2\xi_5 + \xi_1^{18}\xi_2^{16}\xi_3^7\xi_4\xi_5 + \xi_1^{18}\xi_2^{16}\xi_3^5\xi_4^4 + \xi_1^{18}\xi_2^{14}\xi_3^8\xi_4^3 + \xi_1^{18}\xi_2^{13}\xi_3^6\xi_5^2 + \xi_1^{18}\xi_2^9\xi_3^{10}\xi_4\xi_5 +$
$\xi_1^{18}\xi_2^9\xi_3^8\xi_4^4 + \xi_1^{18}\xi_2^8\xi_3^2\xi_4^7 + \xi_1^{18}\xi_2^7\xi_3^{13}\xi_5 + \xi_1^{18}\xi_2^7\xi_3^{11}\xi_4^3 + \xi_1^{18}\xi_2^7\xi_4^4\xi_5^2 + \xi_1^{18}\xi_2^6\xi_3^9\xi_5^2 + \xi_1^{18}\xi_2^6\xi_3^5\xi_4^6 + \xi_1^{18}\xi_2^6\xi_5^2\xi_6 +$
$\xi_1^{18}\xi_2^5\xi_3^{14}\xi_4^2 + \xi_1^{18}\xi_2^4\xi_3^{10}\xi_4^2\xi_5 + \xi_1^{18}\xi_2^4\xi_3^8\xi_4^5 + \xi_1^{18}\xi_2^3\xi_3^6\xi_4^2\xi_5^2 + \xi_1^{18}\xi_2^2\xi_3^{13}\xi_4\xi_5 + \xi_1^{18}\xi_2^2\xi_3^{11}\xi_4^4 + \xi_1^{18}\xi_2^2\xi_3^2\xi_4^4\xi_6 +$
$\xi_1^{18}\xi_3^{14}\xi_4^3 + \xi_1^{18}\xi_3^5\xi_4\xi_5^3 + \xi_1^{18}\xi_3\xi_4^7\xi_5 + \xi_1^{16}\xi_2^{26}\xi_3^3\xi_4\xi_5 + \xi_1^{16}\xi_2^{24}\xi_3^6\xi_5 + \xi_1^{16}\xi_2^{24}\xi_3^4\xi_4^3 + \xi_1^{16}\xi_2^{19}\xi_3^6\xi_4\xi_5 + \xi_1^{16}\xi_2^{18}\xi_3^{13} +$
$\xi_1^{16}\xi_2^{18}\xi_3^4\xi_6 + \xi_1^{16}\xi_2^{17}\xi_3^9\xi_5 + \xi_1^{16}\xi_2^{17}\xi_3^7\xi_4^3 + \xi_1^{16}\xi_2^{16}\xi_3^3\xi_4^3\xi_5 + \xi_1^{16}\xi_2^{16}\xi_3\xi_4^6 + \xi_1^{16}\xi_2^{15}\xi_3^{10}\xi_4^2 + \xi_1^{16}\xi_2^{14}\xi_3^6\xi_4^2\xi_5 +$
$\xi_1^{16}\xi_2^{10}\xi_3^{12}\xi_5 + \xi_1^{16}\xi_2^{10}\xi_3^{10}\xi_4^3 + \xi_1^{16}\xi_2^9\xi_3^8\xi_5^2 + \xi_1^{16}\xi_2^8\xi_3^{13}\xi_4^2 + \xi_1^{16}\xi_2^8\xi_3^4\xi_4^2\xi_6 + \xi_1^{16}\xi_2^8\xi_3^4\xi_5^3 + \xi_1^{16}\xi_2^8\xi_3^2\xi_4^3\xi_5^2 + \xi_1^{16}\xi_2^8\xi_4^6\xi_5 +$
$\xi_1^{16}\xi_2^7\xi_5^4 + \xi_1^{16}\xi_2^6\xi_3^7\xi_4\xi_6 + \xi_1^{16}\xi_2^6\xi_3^5\xi_4^2\xi_5^2 + \xi_1^{16}\xi_2^6\xi_3^3\xi_4^5\xi_5 + \xi_1^{16}\xi_2^5\xi_3^{12}\xi_4\xi_5 + \xi_1^{16}\xi_2^5\xi_3^{10}\xi_4^4 + \xi_1^{16}\xi_2^4\xi_3^{19} + \xi_1^{16}\xi_2^4\xi_3^{10}\xi_6 +$
$\xi_1^{16}\xi_2^4\xi_3^8\xi_4\xi_5^2 + \xi_1^{16}\xi_2^4\xi_3^4\xi_4^7 + \xi_1^{16}\xi_2^3\xi_3^{15}\xi_5 + \xi_1^{16}\xi_2^3\xi_3^{13}\xi_4^3 + \xi_1^{16}\xi_2^3\xi_3^4\xi_4\xi_5^3 + \xi_1^{16}\xi_2^3\xi_3^2\xi_4^4\xi_5^2 + \xi_1^{16}\xi_2^3\xi_4^7\xi_5 + \xi_1^{16}\xi_2^2\xi_3^{11}\xi_5^2 +$
$\xi_1^{16}\xi_2^2\xi_3^9\xi_4^3\xi_5 + \xi_1^{16}\xi_2^2\xi_3^7\xi_4^6 + \xi_1^{16}\xi_2^2\xi_3^2\xi_5^2\xi_6 + \xi_1^{16}\xi_2^2\xi_4\xi_5^4 + \xi_1^{16}\xi_2\xi_3^{16}\xi_4^2 + \xi_1^{16}\xi_3^{12}\xi_4^2\xi_5 + \xi_1^{16}\xi_3^3\xi_5^4 + \xi_1^{16}\xi_3\xi_4^5\xi_6 +$
$\xi_1^{15}\xi_2\xi_3^7\xi_5\xi_6 + \xi_1^{15}\xi_2\xi_3^5\xi_4^3\xi_6 + \xi_1^{15}\xi_2\xi_3^3\xi_4^4\xi_5^2 + \xi_1^{15}\xi_2\xi_3\xi_4^7\xi_5 + \xi_1^{14}\xi_2^{29}\xi_3^2\xi_4\xi_5 + \xi_1^{14}\xi_2^{27}\xi_3^5\xi_5 + \xi_1^{14}\xi_2^{27}\xi_3^3\xi_4^3 +$
$\xi_1^{14}\xi_2^{24}\xi_3^2\xi_4^2\xi_5 + \xi_1^{14}\xi_2^{22}\xi_3^5\xi_4\xi_5 + \xi_1^{14}\xi_2^{22}\xi_3^3\xi_4^4 + \xi_1^{14}\xi_2^{21}\xi_3^{12} + \xi_1^{14}\xi_2^{19}\xi_3^4\xi_5^2 + \xi_1^{14}\xi_2^{19}\xi_3^2\xi_4^3\xi_5 + \xi_1^{14}\xi_2^{19}\xi_4^6 + \xi_1^{14}\xi_2^{17}\xi_3^5\xi_4^2\xi_5 +$
$\xi_1^{14}\xi_2^{17}\xi_3^3\xi_4^5 + \xi_1^{14}\xi_2^{16}\xi_3^{12}\xi_4 + \xi_1^{14}\xi_2^{15}\xi_3^6\xi_4^4 + \xi_1^{14}\xi_2^{14}\xi_3^2\xi_4^4\xi_5 + \xi_1^{14}\xi_2^{12}\xi_3^7\xi_5^2 + \xi_1^{14}\xi_2^{12}\xi_3^5\xi_4^3\xi_5 + \xi_1^{14}\xi_2^{11}\xi_3^{12}\xi_4^2 +$
$\xi_1^{14}\xi_2^{10}\xi_3^6\xi_4^5 + \xi_1^{14}\xi_2^9\xi_3^6\xi_4\xi_6 + \xi_1^{14}\xi_2^9\xi_3^2\xi_4^5\xi_5 + \xi_1^{14}\xi_2^9\xi_4^8 + \xi_1^{14}\xi_2^8\xi_4^2\xi_5^3 + \xi_1^{14}\xi_2^7\xi_3^{18} + \xi_1^{14}\xi_2^7\xi_3^9\xi_6 + \xi_1^{14}\xi_2^7\xi_3^7\xi_4\xi_5^2 +$
$\xi_1^{14}\xi_2^7\xi_3^5\xi_4^4\xi_5 + \xi_1^{14}\xi_2^7\xi_3^3\xi_4^7 + \xi_1^{14}\xi_2^6\xi_3^{12}\xi_4^3 + \xi_1^{14}\xi_2^5\xi_3^{10}\xi_5^2 + \xi_1^{14}\xi_2^5\xi_3^8\xi_4^3\xi_5 + \xi_1^{14}\xi_2^4\xi_3^6\xi_4^2\xi_6 + \xi_1^{14}\xi_2^4\xi_3^4\xi_4^3\xi_5^2 + \xi_1^{14}\xi_2^3\xi_3^{11}\xi_4^2\xi_5 +$
$\xi_1^{14}\xi_2^3\xi_3^9\xi_4^5 + \xi_1^{14}\xi_2^3\xi_3^2\xi_4^2\xi_5\xi_6 + \xi_1^{14}\xi_2^3\xi_4^3\xi_5^3 + \xi_1^{14}\xi_2^2\xi_3^{18}\xi_4 + \xi_1^{14}\xi_2^2\xi_3^9\xi_4\xi_6 + \xi_1^{14}\xi_2^2\xi_3^7\xi_4^2\xi_5^2 + \xi_1^{14}\xi_2^2\xi_3^2\xi_7 + \xi_1^{14}\xi_2^2\xi_4\xi_6^2 +$
$\xi_1^{14}\xi_2\xi_3^{12}\xi_4^4 + \xi_1^{14}\xi_2\xi_3^3\xi_4^4\xi_6 + \xi_1^{14}\xi_2\xi_3\xi_4^5\xi_5^2 + \xi_1^{14}\xi_3^{10}\xi_4\xi_5^2 + \xi_1^{14}\xi_3^8\xi_4^4\xi_5 + \xi_1^{14}\xi_3^6\xi_4^7 + \xi_1^{14}\xi_3^3\xi_6^2 + \xi_1^{14}\xi_3\xi_4\xi_5^2\xi_6 +$
$\xi_1^{13}\xi_2^4\xi_3^6\xi_5\xi_6 + \xi_1^{13}\xi_2^4\xi_3^4\xi_4^3\xi_6 + \xi_1^{13}\xi_2^4\xi_3^2\xi_4^4\xi_5^2 + \xi_1^{13}\xi_2^4\xi_4^7\xi_5 + \xi_1^{12}\xi_2^{32}\xi_3\xi_4\xi_5 + \xi_1^{12}\xi_2^{30}\xi_3^4\xi_5 + \xi_1^{12}\xi_2^{30}\xi_3^2\xi_4^3 +$
$\xi_1^{12}\xi_2^{25}\xi_3^4\xi_4\xi_5 + \xi_1^{12}\xi_2^{24}\xi_3^{11} + \xi_1^{12}\xi_2^{23}\xi_3^7\xi_5 + \xi_1^{12}\xi_2^{23}\xi_3^5\xi_4^3 + \xi_1^{12}\xi_2^{22}\xi_3^3\xi_5^2 + \xi_1^{12}\xi_2^{18}\xi_3^7\xi_4\xi_5 + \xi_1^{12}\xi_2^{17}\xi_3^{14} + \xi_1^{12}\xi_2^{16}\xi_3^{10}\xi_5 +$
$\xi_1^{12}\xi_2^{16}\xi_3^8\xi_4^3 + \xi_1^{12}\xi_2^{15}\xi_3^6\xi_5^2 + \xi_1^{12}\xi_2^{15}\xi_3^4\xi_4^3\xi_5 + \xi_1^{12}\xi_2^{15}\xi_3^2\xi_4^6 + \xi_1^{12}\xi_2^{14}\xi_3^{11}\xi_4^2 + \xi_1^{12}\xi_2^{13}\xi_3^7\xi_4^2\xi_5 + \xi_1^{12}\xi_2^{13}\xi_3^5\xi_4^5 +$
$\xi_1^{12}\xi_2^{12}\xi_3^5\xi_4\xi_6 + \xi_1^{12}\xi_2^{12}\xi_3^3\xi_4^2\xi_5^2 + \xi_1^{12}\xi_2^{12}\xi_3\xi_4^5\xi_5 + \xi_1^{12}\xi_2^{11}\xi_3^8\xi_4^4 + \xi_1^{12}\xi_2^{10}\xi_3^{17} + \xi_1^{12}\xi_2^{10}\xi_3^8\xi_6 + \xi_1^{12}\xi_2^{10}\xi_3^6\xi_4\xi_5^2 +$
$\xi_1^{12}\xi_2^9\xi_4^4\xi_5^2 + \xi_1^{12}\xi_2^8\xi_3^7\xi_4^3\xi_5 + \xi_1^{12}\xi_2^8\xi_3^5\xi_4^6 + \xi_1^{12}\xi_2^7\xi_3^{14}\xi_4^2 + \xi_1^{12}\xi_2^7\xi_3^5\xi_5^3 + \xi_1^{12}\xi_2^7\xi_3\xi_4^6\xi_5 + \xi_1^{12}\xi_2^6\xi_3^{10}\xi_4^2\xi_5 + \xi_1^{12}\xi_2^6\xi_3^8\xi_4^5 +$
$\xi_1^{12}\xi_2^5\xi_3^8\xi_4\xi_6 + \xi_1^{12}\xi_2^5\xi_3^2\xi_4^8 + \xi_1^{12}\xi_2^4\xi_3^{11}\xi_4^4 + \xi_1^{12}\xi_2^3\xi_3^{20} + \xi_1^{12}\xi_2^3\xi_3^{11}\xi_6 + \xi_1^{12}\xi_2^3\xi_3^5\xi_4^7 + \xi_1^{12}\xi_2^3\xi_3^2\xi_6^2 + \xi_1^{12}\xi_2^3\xi_4\xi_5^2\xi_6 +$
$\xi_1^{12}\xi_2^2\xi_3^{16}\xi_5 + \xi_1^{12}\xi_2^2\xi_3^{14}\xi_4^3 + \xi_1^{12}\xi_2^2\xi_3^7\xi_5\xi_6 + \xi_1^{12}\xi_2^2\xi_3^5\xi_4\xi_5^3 + \xi_1^{12}\xi_2\xi_3^8\xi_4^6 + \xi_1^{12}\xi_2\xi_3^3\xi_5^2\xi_6 + \xi_1^{12}\xi_2\xi_3\xi_4\xi_5^4 + \xi_1^{12}\xi_3^8\xi_4^2\xi_6 +$
$\xi_1^{12}\xi_3^8\xi_5^3 + \xi_1^{12}\xi_3^4\xi_4^6\xi_5 + \xi_1^{12}\xi_3^2\xi_4^9 + \xi_1^{11}\xi_2^7\xi_3^5\xi_5\xi_6 + \xi_1^{11}\xi_2^7\xi_3\xi_4^4\xi_5^2 + \xi_1^{11}\xi_2^5\xi_3^6\xi_4^2\xi_6 + \xi_1^{11}\xi_2^5\xi_3^2\xi_4^6\xi_5 + \xi_1^{11}\xi_2^4\xi_3^2\xi_4^2\xi_5\xi_6 +$
$\xi_1^{11}\xi_2^4\xi_3^2\xi_5^4 + \xi_1^{11}\xi_2^4\xi_4^5\xi_6 + \xi_1^{11}\xi_2^4\xi_4^3\xi_5^3 + \xi_1^{11}\xi_2^3\xi_3^9\xi_4\xi_6 + \xi_1^{11}\xi_2^3\xi_3^5\xi_4^5\xi_5 + \xi_1^{11}\xi_2\xi_3^{12}\xi_6 + \xi_1^{11}\xi_2\xi_3^8\xi_4^4\xi_5 + \xi_1^{11}\xi_3^8\xi_5\xi_6 +$
$\xi_1^{11}\xi_3^6\xi_4^3\xi_6 + \xi_1^{11}\xi_3^6\xi_4\xi_5^3 + \xi_1^{11}\xi_4^{10} + \xi_1^{10}\xi_2^{35}\xi_4\xi_5 + \xi_1^{10}\xi_2^{33}\xi_3^3\xi_5 + \xi_1^{10}\xi_2^{33}\xi_3\xi_4^3 + \xi_1^{10}\xi_2^{30}\xi_4^2\xi_5 + \xi_1^{10}\xi_2^{28}\xi_3^3\xi_4\xi_5 +$
$\xi_1^{10}\xi_2^{28}\xi_3\xi_4^4 + \xi_1^{10}\xi_2^{27}\xi_3^{10} + \xi_1^{10}\xi_2^{25}\xi_3^2\xi_5^2 + \xi_1^{10}\xi_2^{22}\xi_3^{10}\xi_4 + \xi_1^{10}\xi_2^{21}\xi_3^6\xi_4\xi_5 + \xi_1^{10}\xi_2^{19}\xi_3^9\xi_5 + \xi_1^{10}\xi_2^{19}\xi_3^7\xi_4^3 + \xi_1^{10}\xi_2^{18}\xi_3^5\xi_5^2 +$
$\xi_1^{10}\xi_2^{17}\xi_3^{10}\xi_4^2 + \xi_1^{10}\xi_2^{16}\xi_3^6\xi_4^2\xi_5 + \xi_1^{10}\xi_2^{16}\xi_3^4\xi_4^5 + \xi_1^{10}\xi_2^{15}\xi_3^4\xi_4\xi_6 + \xi_1^{10}\xi_2^{15}\xi_3^2\xi_4^2\xi_5^2 + \xi_1^{10}\xi_2^{15}\xi_4^5\xi_5 + \xi_1^{10}\xi_2^{14}\xi_3^9\xi_4\xi_5 +$
$\xi_1^{10}\xi_2^{13}\xi_3^{16} + \xi_1^{10}\xi_2^{13}\xi_3^7\xi_6 + \xi_1^{10}\xi_2^{13}\xi_3^5\xi_4\xi_5^2 + \xi_1^{10}\xi_2^{13}\xi_3^3\xi_4^4\xi_5 + \xi_1^{10}\xi_2^{13}\xi_3\xi_4^7 + \xi_1^{10}\xi_2^{12}\xi_3\xi_4\xi_5^3 + \xi_1^{10}\xi_2^{11}\xi_3^6\xi_4^3\xi_5 +$
$\xi_1^{10}\xi_2^{11}\xi_3^4\xi_4^6 + \xi_1^{10}\xi_2^{10}\xi_3^{13}\xi_4^2 + \xi_1^{10}\xi_2^{10}\xi_3^4\xi_4^2\xi_6 + \xi_1^{10}\xi_2^9\xi_3^9\xi_4^2\xi_5 + \xi_1^{10}\xi_2^9\xi_3^7\xi_4^5 + \xi_1^{10}\xi_2^9\xi_4^2\xi_5\xi_6 + \xi_1^{10}\xi_2^9\xi_5^4 + \xi_1^{10}\xi_2^8\xi_3^7\xi_4\xi_6 +$
$\xi_1^{10}\xi_2^8\xi_3^5\xi_4^2\xi_5^2 + \xi_1^{10}\xi_2^8\xi_3\xi_4^8 + \xi_1^{10}\xi_2^7\xi_3^{10}\xi_4^4 + \xi_1^{10}\xi_2^7\xi_3\xi_4^4\xi_6 + \xi_1^{10}\xi_2^7\xi_3\xi_4^2\xi_5^3 + \xi_1^{10}\xi_2^6\xi_3^{19} + \xi_1^{10}\xi_2^6\xi_3^8\xi_4\xi_5^2 + \xi_1^{10}\xi_2^6\xi_3^4\xi_4^7 +$
$\xi_1^{10}\xi_2^5\xi_3^2\xi_4^4\xi_5^2 + \xi_1^{10}\xi_2^5\xi_4^7\xi_5 + \xi_1^{10}\xi_2^4\xi_3^{11}\xi_5^2 + \xi_1^{10}\xi_2^4\xi_3^9\xi_4^3\xi_5 + \xi_1^{10}\xi_2^4\xi_3^7\xi_4^6 + \xi_1^{10}\xi_2^4\xi_3^2\xi_5^2\xi_6 + \xi_1^{10}\xi_2^4\xi_4\xi_5^4 + \xi_1^{10}\xi_2^3\xi_3^3\xi_4^6\xi_5 +$
$\xi_1^{10}\xi_2^3\xi_3\xi_4^9 + \xi_1^{10}\xi_2^2\xi_3^{10}\xi_4^5 + \xi_1^{10}\xi_2^2\xi_3^3\xi_5^4 + \xi_1^{10}\xi_2^2\xi_3\xi_4^5\xi_6 + \xi_1^{10}\xi_3^{13}\xi_4^4 + \xi_1^9\xi_2^{10}\xi_3^4\xi_5\xi_6 + \xi_1^9\xi_2^{10}\xi_4^4\xi_5^2 + \xi_1^9\xi_2^8\xi_3^5\xi_4^2\xi_6 +$
$\xi_1^9\xi_2^8\xi_3\xi_4^6\xi_5 + \xi_1^9\xi_2^6\xi_3^8\xi_4\xi_6 + \xi_1^9\xi_2^6\xi_3^4\xi_4^5\xi_5 + \xi_1^9\xi_2^4\xi_3^{11}\xi_6 + \xi_1^9\xi_2^4\xi_3^7\xi_4^4\xi_5 + \xi_1^8\xi_2^{34}\xi_3^3\xi_4^2 + \xi_1^8\xi_2^{31}\xi_3^2\xi_4\xi_5 + \xi_1^8\xi_2^{30}\xi_3^9 +$
$\xi_1^8\xi_2^{29}\xi_3^5\xi_5 + \xi_1^8\xi_2^{29}\xi_3^3\xi_4^3 + \xi_1^8\xi_2^{28}\xi_3\xi_5^2 + \xi_1^8\xi_2^{24}\xi_3^3\xi_4^4 + \xi_1^8\xi_2^{23}\xi_3^{12} + \xi_1^8\xi_2^{22}\xi_3^6\xi_4^3 + \xi_1^8\xi_2^{21}\xi_3^4\xi_5^2 + \xi_1^8\xi_2^{20}\xi_5^3 + \xi_1^8\xi_2^{18}\xi_3^{12}\xi_4 +$
$\xi_1^8\xi_2^{18}\xi_3^3\xi_4\xi_6 + \xi_1^8\xi_2^{18}\xi_3\xi_4^2\xi_5^2 + \xi_1^8\xi_2^{17}\xi_3^8\xi_4\xi_5 + \xi_1^8\xi_2^{16}\xi_4^7 + \xi_1^8\xi_2^{15}\xi_3^{11}\xi_5 + \xi_1^8\xi_2^{15}\xi_3^9\xi_4^3 + \xi_1^8\xi_2^{15}\xi_4\xi_5^3 + \xi_1^8\xi_2^{14}\xi_3^5\xi_4^3\xi_5 +$
$\xi_1^8\xi_2^{13}\xi_3^{12}\xi_4^2 + \xi_1^8\xi_2^{12}\xi_3^8\xi_4^2\xi_5 + \xi_1^8\xi_2^{12}\xi_3^6\xi_4^5 + \xi_1^8\xi_2^{11}\xi_3^6\xi_4\xi_6 + \xi_1^8\xi_2^{11}\xi_4^8 + \xi_1^8\xi_2^{10}\xi_3^{11}\xi_4\xi_5 + \xi_1^8\xi_2^{10}\xi_3^9\xi_4^4 + \xi_1^8\xi_2^{10}\xi_4^4\xi_6 +$
$\xi_1^8\xi_2^{10}\xi_4^2\xi_5^3 + \xi_1^8\xi_2^9\xi_3^{18} + \xi_1^8\xi_2^9\xi_3^9\xi_6 + \xi_1^8\xi_2^9\xi_3^7\xi_4\xi_5^2 + \xi_1^8\xi_2^9\xi_3^5\xi_4^4\xi_5 + \xi_1^8\xi_2^9\xi_3^3\xi_4^7 + \xi_1^8\xi_2^8\xi_3^{14}\xi_5 + \xi_1^8\xi_2^8\xi_3^{12}\xi_4^3 +$
$\xi_1^8\xi_2^8\xi_3^5\xi_5\xi_6 + \xi_1^8\xi_2^8\xi_3\xi_4^4\xi_5^2 + \xi_1^8\xi_2^7\xi_3^8\xi_4^3\xi_5 + \xi_1^8\xi_2^6\xi_3^{15}\xi_4^2 + \xi_1^8\xi_2^6\xi_3^6\xi_4^2\xi_6 + \xi_1^8\xi_2^6\xi_3^6\xi_5^3 + \xi_1^8\xi_2^6\xi_3^4\xi_4^3\xi_5^2 + \xi_1^8\xi_2^6\xi_4^9 +$
$\xi_1^8\xi_2^5\xi_3^2\xi_4^2\xi_5\xi_6 + \xi_1^8\xi_2^5\xi_4^3\xi_5^3 + \xi_1^8\xi_2^4\xi_3^5\xi_4^5\xi_5 + \xi_1^8\xi_2^4\xi_3^3\xi_4^8 + \xi_1^8\xi_2^3\xi_3^3\xi_4^4\xi_6 + \xi_1^8\xi_2^3\xi_3\xi_4^5\xi_5^2 + \xi_1^8\xi_2^2\xi_3^{12}\xi_6 + \xi_1^8\xi_2^2\xi_3^6\xi_4^7 +$
$\xi_1^8\xi_2\xi_3^{17}\xi_5 + \xi_1^8\xi_2\xi_3^{15}\xi_4^3 + \xi_1^8\xi_2\xi_3^8\xi_5\xi_6 + \xi_1^8\xi_2\xi_3^6\xi_4^3\xi_6 + \xi_1^8\xi_2\xi_3^6\xi_4\xi_5^3 + \xi_1^8\xi_2\xi_4^{10} + \xi_1^8\xi_4^6\xi_6 + \xi_1^8\xi_4^4\xi_5^3 + \xi_1^7\xi_2^{13}\xi_3^3\xi_5\xi_6 +$
$\xi_1^7\xi_2^{13}\xi_3\xi_4^3\xi_6 + \xi_1^7\xi_2^{10}\xi_4^2\xi_5\xi_6 + \xi_1^7\xi_2^{10}\xi_5^4 + \xi_1^7\xi_2^9\xi_3^3\xi_4^5\xi_5 + \xi_1^7\xi_2^9\xi_3\xi_4^8 + \xi_1^7\xi_2^8\xi_3\xi_4^4\xi_6 + \xi_1^7\xi_2^8\xi_3\xi_4^2\xi_5^3 + \xi_1^7\xi_2^6\xi_3^6\xi_5\xi_6 +$
$\xi_1^7\xi_2^6\xi_3^4\xi_4^3\xi_6 + \xi_1^7\xi_2^6\xi_3^2\xi_4^4\xi_5^2 + \xi_1^7\xi_2^6\xi_4^7\xi_5 + \xi_1^7\xi_2^5\xi_3^{11}\xi_5^2 + \xi_1^7\xi_2^5\xi_3^9\xi_4^3\xi_5 + \xi_1^7\xi_2^4\xi_3^7\xi_5^3 + \xi_1^7\xi_2^4\xi_3^5\xi_4^3\xi_5^2 + \xi_1^7\xi_2^4\xi_3^3\xi_4^6\xi_5 +$
$\xi_1^7\xi_2^4\xi_3\xi_4^9 + \xi_1^7\xi_2^2\xi_3^{10}\xi_4\xi_6 + \xi_1^7\xi_2^2\xi_3^8\xi_4^2\xi_5^2 + \xi_1^7\xi_2^2\xi_3^6\xi_4^5\xi_5 + \xi_1^7\xi_2^2\xi_3^4\xi_4^8 + \xi_1^7\xi_2\xi_3^{15}\xi_4\xi_5 + \xi_1^7\xi_2\xi_3^{13}\xi_4^4 + \xi_1^7\xi_3^{13}\xi_6 +$
$\xi_1^7\xi_3^{11}\xi_4\xi_5^2 + \xi_1^7\xi_3^9\xi_4^4\xi_5 + \xi_1^7\xi_3^7\xi_4^7 + \xi_1^6\xi_2^{37}\xi_3^2\xi_4^2 + \xi_1^6\xi_2^{33}\xi_3^8 + \xi_1^6\xi_2^{32}\xi_3^2\xi_4^3 + \xi_1^6\xi_2^{31}\xi_5^2 + \xi_1^6\xi_2^{28}\xi_3^8\xi_4 + \xi_1^6\xi_2^{27}\xi_3^2\xi_4^4 +$
$\xi_1^6\xi_2^{24}\xi_3^3\xi_5^2 + \xi_1^6\xi_2^{23}\xi_3^8\xi_4^2 + \xi_1^6\xi_2^{21}\xi_3^2\xi_4\xi_6 + \xi_1^6\xi_2^{20}\xi_3^5\xi_4^4 + \xi_1^6\xi_2^{19}\xi_3^{14} + \xi_1^6\xi_2^{19}\xi_3^5\xi_6 + \xi_1^6\xi_2^{19}\xi_3^3\xi_4\xi_5^2 + \xi_1^6\xi_2^{17}\xi_3^4\xi_4^3\xi_5 +$
$\xi_1^6\xi_2^{17}\xi_3^2\xi_4^6 + \xi_1^6\xi_2^{16}\xi_3^{11}\xi_4^2 + \xi_1^6\xi_2^{15}\xi_3^7\xi_4^2\xi_5 + \xi_1^6\xi_2^{15}\xi_3^5\xi_4^5 + \xi_1^6\xi_2^{14}\xi_3^5\xi_4\xi_6 + \xi_1^6\xi_2^{14}\xi_3^3\xi_4^2\xi_5^2 + \xi_1^6\xi_2^{14}\xi_3\xi_4^5\xi_5 + \xi_1^6\xi_2^{13}\xi_3^{10}\xi_4\xi_5 +$
$\xi_1^6\xi_2^{13}\xi_3^8\xi_4^4 + \xi_1^6\xi_2^{12}\xi_3^{1}7 + \xi_1^6\xi_2^{12}\xi_3^8\xi_6 + \xi_1^6\xi_2^{12}\xi_3^4\xi_4^4\xi_5 + \xi_1^6\xi_2^{12}\xi_3^2\xi_4^7 + \xi_1^6\xi_2^{11}\xi_3^{13}\xi_5 + \xi_1^6\xi_2^{11}\xi_3^{11}\xi_4^3 + \xi_1^6\xi_2^{11}\xi_3^4\xi_5\xi_6 +$
$\xi_1^6\xi_2^{11}\xi_3^2\xi_4^3\xi_6 + \xi_1^6\xi_2^{11}\xi_3^2\xi_4\xi_5^3 + \xi_1^6\xi_2^{11}\xi_4^4\xi_5^2 + \xi_1^6\xi_2^{10}\xi_3^5\xi_4^6 + \xi_1^6\xi_2^9\xi_3^{14}\xi_4^2 + \xi_1^6\xi_2^7\xi_3^8\xi_4\xi_6 + \xi_1^6\xi_2^7\xi_3^2\xi_4^8 + \xi_1^6\xi_2^6\xi_3^{13}\xi_4\xi_5 +$
$\xi_1^6\xi_2^6\xi_3^2\xi_4^4\xi_6 + \xi_1^6\xi_2^6\xi_4^5\xi_5^2 + \xi_1^6\xi_2^5\xi_3^{11}\xi_6 + \xi_1^6\xi_2^5\xi_3^9\xi_4\xi_5^2 + \xi_1^6\xi_2^4\xi_3^{16}\xi_5 + \xi_1^6\xi_2^4\xi_3^{14}\xi_4^3 + \xi_1^6\xi_2^4\xi_3^5\xi_4^3\xi_6 + \xi_1^6\xi_2^4\xi_3^5\xi_4\xi_5^3 +$
$\xi_1^6\xi_2^4\xi_3^3\xi_4^4\xi_5^2 + \xi_1^6\xi_2^4\xi_3\xi_4^7\xi_5 + \xi_1^6\xi_2^3\xi_3^{12}\xi_5^2 + \xi_1^6\xi_2^3\xi_3^8\xi_4^6 + \xi_1^6\xi_2^2\xi_3^{17}\xi_4^2 + \xi_1^6\xi_3^{20}\xi_4 + \xi_1^5\xi_2^{16}\xi_3^2\xi_5\xi_6 + \xi_1^5\xi_2^{16}\xi_4^3\xi_6 +$

$\xi_1^5\xi_2^{12}\xi_3^2\xi_4^5\xi_5 + \xi_1^5\xi_2^{12}\xi_4^8 + \xi_1^5\xi_2^8\xi_3^{10}\xi_5^2 + \xi_1^5\xi_2^8\xi_3^8\xi_4^3\xi_5 + \xi_1^5\xi_2^6\xi_3^2\xi_4^2\xi_5\xi_6 + \xi_1^5\xi_2^6\xi_3^2\xi_5^4 + \xi_1^5\xi_2^6\xi_4^5\xi_6 + \xi_1^5\xi_2^6\xi_4^3\xi_5^3 +$
$\xi_1^5\xi_2^4\xi_3^{14}\xi_4\xi_5 + \xi_1^5\xi_2^4\xi_3^{12}\xi_4^4 + \xi_1^5\xi_2^2\xi_3^8\xi_5\xi_6 + \xi_1^5\xi_2^2\xi_3^6\xi_4^3\xi_6 + \xi_1^5\xi_2^2\xi_3^6\xi_4\xi_5^3 + \xi_1^5\xi_2^2\xi_4^{10} + \xi_1^4\xi_2^{40}\xi_3\xi_4^2 + \xi_1^4\xi_2^{36}\xi_3^7 +$
$\xi_1^4\xi_2^{33}\xi_3^4\xi_4^2 + \xi_1^4\xi_2^{32}\xi_4^2\xi_5 + \xi_1^4\xi_2^{29}\xi_3^{10} + \xi_1^4\xi_2^{28}\xi_3^6\xi_5 + \xi_1^4\xi_2^{28}\xi_3^4\xi_4^3 + \xi_1^4\xi_2^{27}\xi_3^2\xi_5^2 + \xi_1^4\xi_2^{24}\xi_3^{10}\xi_4 + \xi_1^4\xi_2^{24}\xi_3\xi_4\xi_6 +$
$\xi_1^4\xi_2^{23}\xi_3^4\xi_4^4 + \xi_1^4\xi_2^{22}\xi_3^4\xi_6 + \xi_1^4\xi_2^{22}\xi_3^2\xi_4\xi_5^2 + \xi_1^4\xi_2^{20}\xi_3^5\xi_5^2 + \xi_1^4\xi_2^{20}\xi_3^3\xi_4^3\xi_5 + \xi_1^4\xi_2^{19}\xi_3^{10}\xi_4^2 + \xi_1^4\xi_2^{19}\xi_3\xi_5^3 + \xi_1^4\xi_2^{18}\xi_3^6\xi_4^2\xi_5 +$
$\xi_1^4\xi_2^{18}\xi_3^4\xi_4^5 + \xi_1^4\xi_2^{17}\xi_3^4\xi_4\xi_6 + \xi_1^4\xi_2^{17}\xi_4^5\xi_5 + \xi_1^4\xi_2^{16}\xi_3^9\xi_4\xi_5 + \xi_1^4\xi_2^{15}\xi_3^{16} + \xi_1^4\xi_2^{15}\xi_3^7\xi_6 + \xi_1^4\xi_2^{15}\xi_3\xi_4^7 + \xi_1^4\xi_2^{14}\xi_3^{12}\xi_5 +$
$\xi_1^4\xi_2^{14}\xi_3^{10}\xi_4^3 + \xi_1^4\xi_2^{14}\xi_3^3\xi_5\xi_6 + \xi_1^4\xi_2^{14}\xi_3\xi_4\xi_5^3 + \xi_1^4\xi_2^{12}\xi_3^{13}\xi_4^2 + \xi_1^4\xi_2^{12}\xi_3^4\xi_4^2\xi_6 + \xi_1^4\xi_2^{12}\xi_3^4\xi_5^3 + \xi_1^4\xi_2^{11}\xi_3^9\xi_4^2\xi_5 + \xi_1^4\xi_2^{11}\xi_3^7\xi_4^5 +$
$\xi_1^4\xi_2^{11}\xi_4^2\xi_5\xi_6 + \xi_1^4\xi_2^{11}\xi_5^4 + \xi_1^4\xi_2^{10}\xi_3^3\xi_4^5\xi_5 + \xi_1^4\xi_2^{10}\xi_3\xi_4^8 + \xi_1^4\xi_2^9\xi_3^{12}\xi_4\xi_5 + \xi_1^4\xi_2^9\xi_3\xi_4^4\xi_6 + \xi_1^4\xi_2^9\xi_3\xi_4^2\xi_5^3 + \xi_1^4\xi_2^8\xi_3^{19} +$
$\xi_1^4\xi_2^8\xi_3^6\xi_4^4\xi_5 + \xi_1^4\xi_2^8\xi_3^4\xi_4^7 + \xi_1^4\xi_2^7\xi_3^6\xi_5\xi_6 + \xi_1^4\xi_2^7\xi_3^4\xi_4\xi_5^3 + \xi_1^4\xi_2^5\xi_3^{16}\xi_4^2 + \xi_1^4\xi_2^5\xi_3^7\xi_4^2\xi_6 + \xi_1^4\xi_2^5\xi_3^5\xi_4^3\xi_5^2 + \xi_1^4\xi_2^4\xi_3^{12}\xi_4^2\xi_5 +$
$\xi_1^4\xi_2^4\xi_3^{10}\xi_4^5 + \xi_1^4\xi_2^3\xi_3^{19}\xi_4 + \xi_1^4\xi_2^3\xi_3^{10}\xi_4\xi_6 + \xi_1^4\xi_2^3\xi_3^8\xi_4^2\xi_5^2 + \xi_1^4\xi_2^3\xi_3^6\xi_4^5\xi_5 + \xi_1^4\xi_2^3\xi_3^4\xi_4^8 + \xi_1^4\xi_2^2\xi_3^{15}\xi_4\xi_5 + \xi_1^4\xi_2^2\xi_3^{13}\xi_4^4 +$
$\xi_1^4\xi_2^2\xi_3^4\xi_4^4\xi_6 + \xi_1^4\xi_2^2\xi_4^8\xi_5 + \xi_1^4\xi_2\xi_3^{13}\xi_6 + \xi_1^4\xi_2\xi_3^{11}\xi_4\xi_5^2 + \xi_1^4\xi_2\xi_3^9\xi_4^4\xi_5 + \xi_1^4\xi_2\xi_3^7\xi_4^7 + \xi_1^4\xi_3^{18}\xi_5 + \xi_1^4\xi_3^{16}\xi_4^3 + \xi_1^4\xi_3^5\xi_4^4\xi_5^2 +$
$\xi_1^4\xi_3\xi_4^{10} + \xi_1^4\xi_4^2\xi_7 + \xi_1^4\xi_5\xi_6^2 + \xi_1^3\xi_2^{19}\xi_3\xi_5\xi_6 + \xi_1^3\xi_2^{17}\xi_3^2\xi_4^2\xi_6 + \xi_1^3\xi_2^{15}\xi_3^5\xi_4\xi_6 + \xi_1^3\xi_2^{15}\xi_3\xi_4^5\xi_5 + \xi_1^3\xi_2^{13}\xi_3^8\xi_6 +$
$\xi_1^3\xi_2^{13}\xi_3^2\xi_4^7 + \xi_1^3\xi_2^{11}\xi_3^9\xi_5^2 + \xi_1^3\xi_2^{11}\xi_3^5\xi_4^6 + \xi_1^3\xi_2^9\xi_3^{10}\xi_4^2\xi_5 + \xi_1^3\xi_2^9\xi_3^8\xi_4^5 + \xi_1^3\xi_2^5\xi_3^{16}\xi_5 + \xi_1^3\xi_2^5\xi_3^{14}\xi_4^3 + \xi_1^3\xi_2^3\xi_3^{17}\xi_4^2 +$
$\xi_1^3\xi_2\xi_3^{20}\xi_4 + \xi_1^2\xi_2^{43}\xi_4^2 + \xi_1^2\xi_2^{39}\xi_3^6 + \xi_1^2\xi_2^{38}\xi_4^3 + \xi_1^2\xi_2^{34}\xi_3^6\xi_4 + \xi_1^2\xi_2^{33}\xi_4^4 + \xi_1^2\xi_2^{28}\xi_4^5 + \xi_1^2\xi_2^{27}\xi_4\xi_6 + \xi_1^2\xi_2^{25}\xi_3^{12} +$
$\xi_1^2\xi_2^{25}\xi_3^3\xi_6 + \xi_1^2\xi_2^{25}\xi_3\xi_4\xi_5^2 + \xi_1^2\xi_2^{23}\xi_3^4\xi_5^2 + \xi_1^2\xi_2^{23}\xi_3^2\xi_4^3\xi_5 + \xi_1^2\xi_2^{22}\xi_5^3 + \xi_1^2\xi_2^{21}\xi_3^5\xi_4^2\xi_5 + \xi_1^2\xi_2^{21}\xi_3^3\xi_4^5 + \xi_1^2\xi_2^{20}\xi_3^{12}\xi_4 +$
$\xi_1^2\xi_2^{20}\xi_3^3\xi_4\xi_6 + \xi_1^2\xi_2^{20}\xi_3\xi_4^2\xi_5^2 + \xi_1^2\xi_2^{19}\xi_3^8\xi_4\xi_5 + \xi_1^2\xi_2^{18}\xi_3^6\xi_6 + \xi_1^2\xi_2^{18}\xi_3^4\xi_4\xi_5^2 + \xi_1^2\xi_2^{18}\xi_4^7 + \xi_1^2\xi_2^{17}\xi_3^{11}\xi_5 + \xi_1^2\xi_2^{17}\xi_3^9\xi_4^3 +$
$\xi_1^2\xi_2^{17}\xi_3^2\xi_5\xi_6 + \xi_1^2\xi_2^{17}\xi_4^3\xi_6 + \xi_1^2\xi_2^{16}\xi_3^7\xi_5^2 + \xi_1^2\xi_2^{16}\xi_3^3\xi_4^6 + \xi_1^2\xi_2^{15}\xi_3^{12}\xi_4^2 + \xi_1^2\xi_2^{15}\xi_3^3\xi_5^3 + \xi_1^2\xi_2^{15}\xi_3\xi_4^3\xi_5^2 + \xi_1^2\xi_2^{14}\xi_3^8\xi_4^2\xi_5 +$
$\xi_1^2\xi_2^{13}\xi_3^6\xi_4\xi_6 + \xi_1^2\xi_2^{13}\xi_3^4\xi_4^2\xi_5^2 + \xi_1^2\xi_2^{12}\xi_4^4\xi_6 + \xi_1^2\xi_2^{12}\xi_4^2\xi_5^3 + \xi_1^2\xi_2^{11}\xi_3^{18} + \xi_1^2\xi_2^{11}\xi_3^9\xi_6 + \xi_1^2\xi_2^{11}\xi_3^7\xi_4\xi_5^2 + \xi_1^2\xi_2^8\xi_3^6\xi_4^2\xi_6 +$
$\xi_1^2\xi_2^8\xi_3^4\xi_4^3\xi_5^2 + \xi_1^2\xi_2^6\xi_3^{18}\xi_4 + \xi_1^2\xi_2^6\xi_3^9\xi_4\xi_6 + \xi_1^2\xi_2^6\xi_3^3\xi_4^8 + \xi_1^2\xi_2^5\xi_3^{14}\xi_4\xi_5 + \xi_1^2\xi_2^5\xi_3^{12}\xi_4^4 + \xi_1^2\xi_2^4\xi_3^{12}\xi_6 + \xi_1^2\xi_2^4\xi_3^{10}\xi_4\xi_5^2 +$
$\xi_1^2\xi_2^4\xi_3^8\xi_4^4\xi_5 + \xi_1^2\xi_2^4\xi_3^6\xi_4^7 + \xi_1^2\xi_2^3\xi_3^{17}\xi_5 + \xi_1^2\xi_2^3\xi_3^{15}\xi_4^3 + \xi_1\xi_2^{22}\xi_5\xi_6 + \xi_1\xi_2^{20}\xi_3\xi_4^2\xi_6 + \xi_1\xi_2^{18}\xi_3^4\xi_4\xi_6 + \xi_1\xi_2^{18}\xi_4^5\xi_5 +$
$\xi_1\xi_2^{16}\xi_3^7\xi_6 + \xi_1\xi_2^{16}\xi_3\xi_4^7 + \xi_1\xi_2^{14}\xi_3^8\xi_5^2 + \xi_1\xi_2^{14}\xi_3^4\xi_4^6 + \xi_1\xi_2^{12}\xi_3^9\xi_4^2\xi_5 + \xi_1\xi_2^{12}\xi_3^7\xi_4^5 + \xi_1\xi_2^{12}\xi_4^2\xi_5\xi_6 + \xi_1\xi_2^{12}\xi_5^4 +$
$\xi_1\xi_2^{10}\xi_3\xi_4^4\xi_6 + \xi_1\xi_2^{10}\xi_3\xi_4^2\xi_5^3 + \xi_1\xi_2^8\xi_3^{15}\xi_5 + \xi_1\xi_2^8\xi_3^{13}\xi_4^3 + \xi_1\xi_2^8\xi_3^6\xi_5\xi_6 + \xi_1\xi_2^8\xi_3^4\xi_4^3\xi_6 + \xi_1\xi_2^8\xi_3^2\xi_4^4\xi_5^2 + \xi_1\xi_2^8\xi_4^7\xi_5 +$
$\xi_1\xi_2^6\xi_3^{16}\xi_4^2 + \xi_1\xi_2^6\xi_3^7\xi_5^3 + \xi_1\xi_2^6\xi_3^5\xi_4^3\xi_5^2 + \xi_1\xi_2^6\xi_3^3\xi_4^6\xi_5 + \xi_1\xi_2^6\xi_3\xi_4^9 + \xi_1\xi_2^4\xi_3^{19}\xi_4 + \xi_1\xi_2^4\xi_3^{10}\xi_4\xi_6 + \xi_1\xi_2^4\xi_3^8\xi_4^2\xi_5^2 +$
$\xi_1\xi_2^4\xi_3^6\xi_4^5\xi_5 + \xi_1\xi_2^4\xi_3^4\xi_4^8 + \xi_1\xi_2^2\xi_3^{13}\xi_6 + \xi_1\xi_2^2\xi_3^{11}\xi_4\xi_5^2 + \xi_1\xi_2^2\xi_3^9\xi_4^4\xi_5 + \xi_1\xi_2^2\xi_3^7\xi_4^7 + \xi_2^{39}\xi_3^2\xi_4^2 + \xi_2^{35}\xi_3^8 + \xi_2^{34}\xi_3^2\xi_4^3 +$
$\xi_2^{32}\xi_3^5\xi_4^2 + \xi_2^{30}\xi_3^8\xi_4 + \xi_2^{29}\xi_3^2\xi_4^4 + \xi_2^{28}\xi_3^{11} + \xi_2^{28}\xi_3^2\xi_6 + \xi_2^{26}\xi_3^3\xi_5^2 + \xi_2^{24}\xi_3^4\xi_4^2\xi_5 + \xi_2^{23}\xi_3^2\xi_4\xi_6 + \xi_2^{22}\xi_3^5\xi_4^4 + \xi_2^{21}\xi_3^{14} +$
$\xi_2^{21}\xi_3^5\xi_6 + \xi_2^{21}\xi_3^3\xi_4\xi_5^2 + \xi_2^{20}\xi_3\xi_5\xi_6 + \xi_2^{19}\xi_3^6\xi_5^2 + \xi_2^{18}\xi_3^2\xi_5^3 + \xi_2^{16}\xi_3^5\xi_4\xi_6 + \xi_2^{16}\xi_3\xi_4^5\xi_5 + \xi_2^{15}\xi_3^8\xi_4^4 + \xi_2^{14}\xi_3^6\xi_4\xi_5^2 +$
$\xi_2^{12}\xi_3^9\xi_5^2 + \xi_2^{10}\xi_3^8\xi_4^5 + \xi_2^9\xi_3^8\xi_4\xi_6 + \xi_2^9\xi_3^2\xi_4^8 + \xi_2^8\xi_3^{11}\xi_4^4 + \xi_2^7\xi_3^{20} + \xi_2^7\xi_3^{11}\xi_6 + \xi_2^7\xi_3^9\xi_4\xi_5^2 + \xi_2^6\xi_3^{16}\xi_5 + \xi_2^4\xi_3^8\xi_4^2\xi_6 +$
$\xi_2^4\xi_3^8\xi_5^3 + \xi_2^2\xi_3^4\xi_7 + \xi_2^2\xi_5^5 + \xi_3^{23} + \xi_3^{14}\xi_6 + \xi_3^{12}\xi_4\xi_5^2 + \xi_3^{10}\xi_4^4\xi_5 + \xi_3^8\xi_4^7 + \xi_3^5\xi_6^2 + \xi_3\xi_4^2\xi_5^4$

$a_{193} := \xi_1^{16}\xi_2^{12}\xi_3^2\xi_7 + \xi_1^{16}\xi_2^{12}\xi_4\xi_6^2 + \xi_1^{16}\xi_2^8\xi_3^4\xi_5^2\xi_6 + \xi_1^{16}\xi_2^8\xi_3^2\xi_4\xi_5^4 + \xi_1^{16}\xi_2^8\xi_4^6\xi_6 + \xi_1^{16}\xi_2^8\xi_4^4\xi_5^3 + \xi_1^{16}\xi_2^4\xi_3^6\xi_4^4\xi_6 +$
$\xi_1^{16}\xi_2^4\xi_3^4\xi_4^5\xi_5^2 + \xi_1^{16}\xi_3^8\xi_4^6\xi_5 + \xi_1^{16}\xi_3^6\xi_4^9 + \xi_1^{12}\xi_2^{18}\xi_7 + \xi_1^{12}\xi_2^{16}\xi_3\xi_6^2 + \xi_1^{12}\xi_2^{10}\xi_3^4\xi_4^4\xi_6 + \xi_1^{12}\xi_2^{10}\xi_4^8\xi_5 + \xi_1^{12}\xi_2^8\xi_3^5\xi_4^4\xi_5^2 +$
$\xi_1^{12}\xi_2^8\xi_3\xi_4^{10} + \xi_1^{12}\xi_2^8\xi_4^2\xi_7 + \xi_1^{12}\xi_2^8\xi_5\xi_6^2 + \xi_1^{12}\xi_2^2\xi_3^{12}\xi_4^4\xi_5 + \xi_1^{12}\xi_3^{13}\xi_4^6 + \xi_1^{12}\xi_3^4\xi_4^6\xi_6 + \xi_1^{12}\xi_3^4\xi_4^4\xi_5^3 + \xi_1^8\xi_2^{20}\xi_5^2\xi_6 +$
$\xi_1^8\xi_2^{18}\xi_3\xi_5^4 + \xi_1^8\xi_2^{12}\xi_3^8\xi_4^2\xi_6 + \xi_1^8\xi_2^{12}\xi_3^8\xi_5^3 + \xi_1^8\xi_2^{10}\xi_3^4\xi_7 + \xi_1^8\xi_2^{10}\xi_5^5 + \xi_1^8\xi_2^8\xi_3^5\xi_6^2 + \xi_1^8\xi_2^8\xi_3\xi_4^2\xi_5^4 + \xi_1^8\xi_2^4\xi_3^{16}\xi_4^2\xi_5 +$
$\xi_1^8\xi_2^2\xi_3^{17}\xi_4^4 + \xi_1^8\xi_2^2\xi_3^8\xi_4^4\xi_6 + \xi_1^8\xi_2^2\xi_3^8\xi_4^2\xi_5^3 + \xi_1^8\xi_3^9\xi_4^4\xi_5^2 + \xi_1^8\xi_3^5\xi_4^{10} + \xi_1^8\xi_3^4\xi_4^2\xi_7 + \xi_1^8\xi_3^4\xi_5\xi_6^2 + \xi_1^8\xi_4^4\xi_5^2\xi_6 + \xi_1^8\xi_4^2\xi_5^5 +$
$\xi_1^4\xi_2^{22}\xi_4^4\xi_6 + \xi_1^4\xi_2^{20}\xi_3\xi_4^4\xi_5^2 + \xi_1^4\xi_2^{14}\xi_3^{12}\xi_6 + \xi_1^4\xi_2^{14}\xi_3^8\xi_4^4\xi_5 + \xi_1^4\xi_2^{12}\xi_3^{13}\xi_5^2 + \xi_1^4\xi_2^{12}\xi_3^9\xi_4^6 + \xi_1^4\xi_2^{12}\xi_4^6\xi_6 + \xi_1^4\xi_2^{12}\xi_4^4\xi_5^3 +$
$\xi_1^4\xi_2^6\xi_3^{20}\xi_5 + \xi_1^4\xi_2^4\xi_3^{21}\xi_4^2 + \xi_1^4\xi_2^4\xi_3^{12}\xi_4^2\xi_6 + \xi_1^4\xi_2^4\xi_3^{12}\xi_5^3 + \xi_1^4\xi_2^2\xi_3^8\xi_7 + \xi_1^4\xi_2^2\xi_4^8\xi_6 + \xi_1^4\xi_3^9\xi_6^2 + \xi_1^4\xi_3\xi_4^8\xi_5^2 + \xi_1^4\xi_5^2\xi_7 +$
$\xi_1^4\xi_6^3 + \xi_2^{24}\xi_4^6\xi_5 + \xi_2^{22}\xi_3\xi_4^8 + \xi_2^{20}\xi_3^6\xi_4^4\xi_5 + \xi_2^{20}\xi_3^4\xi_4^7 + \xi_2^{16}\xi_3^{12}\xi_4^2\xi_5 + \xi_2^{16}\xi_3^{10}\xi_4^5 + \xi_2^{14}\xi_3^4\xi_4^4\xi_6 + \xi_2^{14}\xi_4^8\xi_5 + \xi_2^{12}\xi_3^{18}\xi_5 +$
$\xi_2^{12}\xi_3^{16}\xi_4^3 + \xi_2^{12}\xi_3^5\xi_4^4\xi_5^2 + \xi_2^{12}\xi_3\xi_4^{10} + \xi_2^{12}\xi_4^2\xi_7 + \xi_2^{12}\xi_5\xi_6^2 + \xi_2^8\xi_3^{22}\xi_4 + \xi_2^8\xi_3^6\xi_7 + \xi_2^8\xi_3^4\xi_4\xi_6^2 + \xi_2^8\xi_3^2\xi_5^5 + \xi_2^8\xi_4^3\xi_5^4 +$
$\xi_2^6\xi_3^{25} + \xi_2^6\xi_3^{16}\xi_6 + \xi_2^6\xi_3^{12}\xi_4^4\xi_5 + \xi_2^4\xi_3^{17}\xi_5^2 + \xi_2^4\xi_3^{13}\xi_4^6 + \xi_2^4\xi_3^8\xi_5^2\xi_6 + \xi_2^4\xi_4^{10}\xi_5 + \xi_2^2\xi_3^9\xi_5^4 + \xi_2^2\xi_3\xi_4^{12} + \xi_2^2\xi_4^4\xi_7 +$
$\xi_2^2\xi_5^4\xi_6 + \xi_3^{10}\xi_4^4\xi_6 + \xi_3^8\xi_4^5\xi_5^2 + \xi_3^6\xi_4^8\xi_5 + \xi_3^4\xi_4^{11} + \xi_3\xi_4^4\xi_6^2 + \xi_3\xi_5^6$

$a_{225} := \xi_1^8\xi_3^4\xi_5^2\xi_7 + \xi_1^8\xi_3^4\xi_6^3 + \xi_1^8\xi_4^6\xi_7 + \xi_1^8\xi_4^4\xi_5\xi_6^2 + \xi_1^8\xi_4^2\xi_5^4\xi_6 + \xi_1^8\xi_5^7 + \xi_2^{12}\xi_5^2\xi_7 + \xi_2^{12}\xi_6^3 + \xi_2^8\xi_3^2\xi_4^4\xi_7 + \xi_2^8\xi_3^2\xi_5^4\xi_6 +$
$\xi_2^8\xi_4^5\xi_6^2 + \xi_2^8\xi_4\xi_5^6 + \xi_2^4\xi_3^8\xi_4^2\xi_7 + \xi_2^4\xi_3^8\xi_5\xi_6^2 + \xi_2^4\xi_4^{10}\xi_6 + \xi_2^4\xi_4^8\xi_5^3 + \xi_3^{14}\xi_7 + \xi_3^{12}\xi_4\xi_6^2 + \xi_3^{10}\xi_5^5 + \xi_3^8\xi_4^3\xi_5^4 + \xi_3^6\xi_4^8\xi_6 +$
$\xi_3^4\xi_4^9\xi_5^2 + \xi_3^2\xi_4^{12}\xi_5 + \xi_4^{15}$

Here is a Gröbner basis for the ideal of relations. This is complete only through degree 200.

(1) a_1^3

(2) a_1a_6

(3) a_1a_9

(4) $a_1a_{14} + a_6a_9$

(5) $a_1a_{17} + a_9^2$

(6) $a_1a_{30} + a_{14}a_{17}$

(7) $a_1a_{33} + a_{17}^2$

(8) a_1a_{49}

(9) $a_1a_{62} + a_{14}a_{49} + a_{30}a_{33}$

(10) $a_1a_{65} + a_{33}^2$

(11) a_1a_{81}

(12) $a_1a_{97} + a_{49}^2$

(13) $a_1a_{126} + a_{30}a_{97} + a_{62}a_{65}$

(14) $a_1a_{129} + a_{65}^2$

(15) a_1a_{145}

(16) $a_1a_{161} + a_{81}^2$

(17) $a_1a_{193} + a_{97}^2$

(18) $a_6^3 + a_9^2$

(19) $a_6^2a_9$

(20) $a_6^2a_{14} + a_9a_{17}$

(21) $a_6^2a_{30} + a_9a_{33}$

(22) $a_6^2a_{62} + a_9a_{65}$

(23) $a_6^2a_{126} + a_9a_{129}$

(24) $a_6a_9^2$

(25) $a_6a_9a_{30} + a_{14}^2a_{17}$

(26) $a_6a_9a_{62} + a_{14}^2a_{49} + a_{17}a_{30}^2$

(27) $a_6a_9a_{126} + a_{17}a_{62}^2 + a_{30}^2a_{81}$

(28) $a_6a_{14}^2 + a_{17}^2$

(29) $a_6a_{14}a_{30} + a_{17}a_{33}$

(30) $a_6a_{14}a_{62} + a_{17}a_{65}$

(31) $a_6a_{14}a_{126} + a_{14}^4a_{30}^3 + a_{17}a_{129} + a_{65}a_{81}$

(32) $a_6a_{17} + a_9a_{14}$

(33) $a_6a_{30}^2 + a_{33}^2$

(34) $a_6a_{30}a_{62} + a_{33}a_{65} + a_{49}^2$

(35) $a_6a_{30}a_{126} + a_{14}^5a_{30}a_{62} + a_{33}a_{129} + a_{81}^2$

(36) $a_6a_{33} + a_9a_{30}$

(37) a_6a_{49}

(38) $a_6a_{62}^2 + a_{49}a_{81} + a_{65}^2$

(39) $a_6a_{62}a_{126} + a_{14}^3a_{30}^3a_{62} + a_{49}a_{145} + a_{65}a_{129} + a_{97}^2$

(40) $a_6a_{65} + a_9a_{62}$

(41) a_6a_{81}

(42) a_6a_{97}

(43) $a_6a_{129} + a_9a_{126}$

(44) $a_6a_{145} + a_{14}a_{17}a_{30}^4$

(45) $a_6a_{161} + a_{17}a_{30}^5$

(46) $a_6a_{193} + a_{17}a_{30}^4a_{62}$

(47) a_9^3

(48) $a_9^2a_{17}$

(49) $a_9^2a_{30} + a_{14}a_{17}^2$

(50) $a_9^2a_{33}$

(51) $a_9^2a_{62} + a_{17}a_{30}a_{33}$

(52) $a_9^2a_{65}$

(53) $a_9^2a_{126} + a_{17}a_{62}a_{65} + a_{30}a_{49}a_{65}$

(54) $a_9^2a_{129}$

(55) $a_9^2a_{193}$

(56) $a_9a_{14}^2$

(57) $a_9a_{14}a_{17}$

(58) $a_9a_{14}a_{30}a_{62} + a_{17}a_{33}a_{65}$

(59) $a_9a_{14}a_{30}a_{126} + a_{17}a_{33}a_{129}$

(60) $a_9a_{14}a_{62}a_{126} + a_{17}a_{65}a_{129}$

(61) $a_9a_{14}a_{126}^2 + a_{17}a_{129}^2 + a_{65}a_{81}a_{129}$

(62) $a_9a_{14}a_{193}$

(63) $a_9a_{17}^2$

(64) $a_9a_{17}a_{33} + a_{14}^3a_{17}$

(65) $a_9a_{17}a_{65} + a_{14}^3a_{49} + a_{14}a_{17}a_{30}^2$

(66) $a_9a_{17}a_{126}^3 + a_{17}a_{129}^3$

(67) $a_9a_{17}a_{129} + a_{14}a_{30}a_{49}a_{62} + a_{30}^3a_{65}$

(68) $a_9a_{17}a_{193}$

(69) $a_9a_{30}^2$

(70) $a_9a_{30}a_{33}$

(71) $a_9a_{30}a_{62}a_{126} + a_{33}a_{65}a_{129}$

(72) $a_9a_{30}a_{65} + a_9a_{33}a_{62}$

(73) $a_9a_{30}a_{126}^2 + a_{33}a_{129}^2 + a_{65}a_{81}a_{145}$

(74) $a_9a_{30}a_{129} + a_9a_{33}a_{126}$

(75) $a_9a_{30}a_{193}$

(76) $a_9a_{33}^2$

(77) $a_9a_{33}a_{65} + a_{14}^2a_{30}a_{49} + a_{17}a_{30}^3$

(78) $a_9a_{33}a_{126}^3 + a_{33}a_{129}^3$

(79) $a_9a_{33}a_{129} + a_{17}a_{30}a_{62}^2 + a_{30}^3a_{81}$

(80) $a_9a_{33}a_{193}$

(81) a_9a_{49}

(82) $a_9a_{62}^2$

(83) $a_9a_{62}a_{65}$

(84) $a_9a_{62}a_{126}^2 + a_{65}a_{129}^2 + a_{81}a_{97}a_{145}$

(85) $a_9a_{62}a_{129} + a_9a_{65}a_{126}$

(86) $a_9a_{62}a_{193}$

(87) $a_9a_{65}^2$

(88) $a_9a_{65}a_{126}^3 + a_{65}a_{129}^3$

(89) $a_9a_{65}a_{129} + a_{17}a_{62}^3 + a_{30}^2a_{62}a_{81}$

(90) $a_9a_{65}a_{193}$

(91) a_9a_{81}

(92) a_9a_{97}

(93) $a_9a_{126}a_{193}$

(94) $a_9a_{129}^2 + a_{17}a_{62}^2a_{126} + a_{30}^2a_{81}a_{126}$

(95) $a_9a_{129}a_{193}$

(96) a_9a_{145}

(97) a_9a_{161}

(98) $a_{14}^7 + a_{49}^2$

(99) $a_{14}^6a_{30} + a_{49}a_{65}$

(100) $a_{14}^6a_{62} + a_{14}^4a_{30}^3 + a_{65}a_{81}$

(101) $a_{14}^5a_{30}^2 + a_{49}a_{81}$

(102) $a_{14}^5a_{30}a_{62}a_{193} + a_{17}a_{30}^5a_{62}a_{126} + a_{33}a_{129}a_{193}$

(103) $a_{14}^5a_{62}^2 + a_{49}a_{145}$

(104) $a_{14}^4a_{17}$

(105) $a_{14}^4a_{30}^3a_{193} + a_{17}a_{129}a_{193} + a_{30}^4a_{33}a_{62}^3 + a_{65}a_{81}a_{193} + a_{81}a_{97}a_{161}$

(106) $a_{14}^4a_{30}^2a_{62} + a_{49}a_{129}$

(107) $a_{14}^4a_{49}$

(108) $a_{14}^3a_{17}^2$

(109) $a_{14}^3a_{30}^4 + a_{81}^2$

(110) $a_{14}^3a_{30}^3a_{62}^2 + a_{49}a_{62}a_{145} + a_{49}a_{81}a_{126} + a_{62}a_{65}a_{129} + a_{62}a_{97}^2 + a_{65}^2a_{126}$

(111) $a_{14}^3a_{30}^3a_{62}a_{193} + a_{30}^6a_{81}a_{126} + a_{49}a_{145}a_{193} + a_{65}a_{129}a_{193} + a_{97}^2a_{193}$

(112) $a_{14}^2a_{17}a_{30}$

(113) $a_{14}^2a_{30}^5 + a_{49}a_{129} + a_{81}a_{97}$

(114) $a_{14}^2a_{30}^2a_{49} + a_{17}a_{30}^4$

(115) $a_{14}^2a_{49}a_{62} + a_{17}a_{30}^2a_{62}$

(116) $a_{14}a_{17}^2a_{30}$

(117) $a_{14}a_{17}a_{62} + a_{14}a_{30}a_{49} + a_{30}^2a_{33}$

(118) $a_{14}a_{17}a_{126} + a_{30}^2a_{97} + a_{30}a_{62}a_{65}$

(119) $a_{14}a_{17}a_{193} + a_{49}^2a_{126} + a_{62}a_{81}^2$

(120) $a_{14}a_{30}^6 + a_{49}a_{145} + a_{97}^2$

(121) $a_{14}a_{30}^3a_{49}a_{62} + a_{30}^5a_{65}$

(122) $a_{14}a_{30}a_{49}a_{62}^3 + a_{30}^3a_{62}^2a_{65}$

(123) $a_{14}a_{33} + a_{17}a_{30}$

(124) $a_{14}a_{49}^2$

(125) $a_{14}a_{49}a_{126} + a_{30}a_{33}a_{126} + a_{30}a_{62}a_{97} + a_{62}^2a_{65}$

(126) $a_{14}a_{49}a_{193} + a_{30}a_{33}a_{193} + a_{62}a_{97}^2$

(127) $a_{14}a_{65} + a_{17}a_{62} + a_{30}a_{49}$

(128) $a_{14}a_{81} + a_{30}a_{65} + a_{33}a_{62}$

(129) $a_{14}a_{97} + a_{30}a_{81} + a_{49}a_{62}$

(130) $a_{14}a_{129} + a_{17}a_{126} + a_{62}a_{81}$

(131) $a_{14}a_{145} + a_{30}a_{129} + a_{33}a_{126} + a_{62}a_{97}$

(132) $a_{14}a_{161} + a_{30}a_{145} + a_{49}a_{126}$

(133) a_{17}^3

(134) $a_{17}^2a_{30}^4$

(135) $a_{17}^2a_{33}$

(136) $a_{17}^2a_{62} + a_{30}a_{33}^2$

(137) $a_{17}^2a_{65}$

(138) $a_{17}^2a_{126} + a_{30}a_{65}^2 + a_{49}^2a_{62}$

(139) $a_{17}^2a_{129}$

(140) $a_{17}^2a_{193}$

(141) $a_{17}a_{30}^6$

(142) $a_{17}a_{30}^5a_{193} + a_{30}^2a_{49}a_{62}^3a_{65}$

(143) $a_{17}a_{30}^3a_{33}$

(144) $a_{17}a_{30}^2a_{62}^2 + a_{30}^4a_{81}$

(145) $a_{17}a_{30}a_{33}a_{62}$

(146) $a_{17}a_{30}a_{33}a_{126} + a_{17}a_{62}^2a_{65} + a_{30}a_{49}a_{62}a_{65}$

(147) $a_{17}a_{30}a_{62}^3a_{126}^2 + a_{30}^3a_{62}a_{81}a_{126}^2 + a_{33}a_{65}a_{129}^3$

(148) $a_{17}a_{30}a_{62}^2a_{126}^3 + a_{30}^3a_{81}a_{126}^3 + a_{33}a_{129}^4$

(149) $a_{17}a_{30}a_{65} + a_{17}a_{33}a_{62}$

(150) $a_{17}a_{30}a_{129} + a_{17}a_{33}a_{126} + a_{49}a_{62}a_{65}$

(151) $a_{17}a_{33}^2$

(152) $a_{17}a_{33}a_{62}^2a_{126}^4 + a_{30}^2a_{49}a_{65}a_{126}^4 + a_{33}a_{129}^5$

(153) $a_{17}a_{33}a_{62}a_{65}$

(154) $a_{17}a_{33}a_{65}a_{129}^2 + a_{30}^4a_{62}a_{65}a_{126} + a_{30}^3a_{33}a_{62}^2a_{126} + a_{30}^3a_{62}^3a_{97} + a_{30}^2a_{62}^4a_{65}$

(155) $a_{17}a_{33}a_{129}^3 + a_{30}^4a_{65}a_{126}^2 + a_{30}^3a_{33}a_{62}a_{126}^2 + a_{30}^3a_{62}^2a_{97}a_{126} + a_{30}^2a_{62}^3a_{65}a_{126}$

(156) $a_{17}a_{33}a_{193} + a_{49}a_{65}a_{129}$

(157) $a_{17}a_{49}$

(158) $a_{17}a_{62}^4 + a_{30}^2a_{62}^2a_{81}$

(159) $a_{17}a_{62}^3a_{65} + a_{30}a_{49}a_{62}^2a_{65}$

(160) $a_{17}a_{62}^3a_{126}^3 + a_{30}^2a_{62}a_{81}a_{126}^3 + a_{65}a_{129}^4$

(161) $a_{17}a_{62}^2a_{65}a_{126}^4 + a_{30}a_{49}a_{62}a_{65}a_{126}^4 + a_{65}a_{129}^5$

(162) $a_{17}a_{62}^2a_{193} + a_{30}^2a_{81}a_{193}$

(163) $a_{17}a_{62}a_{129} + a_{17}a_{65}a_{126} + a_{30}a_{49}a_{129} + a_{62}a_{65}a_{81}$

(164) $a_{17}a_{65}^2$

(165) $a_{17}a_{65}a_{129}^3 + a_{30}^3a_{62}a_{65}a_{126}^2 + a_{30}^2a_{33}a_{62}^2a_{126}^2 + a_{30}^2a_{62}^3a_{97}a_{126} + a_{30}a_{62}^4a_{65}a_{126}$

(166) $a_{17}a_{65}a_{193} + a_{65}a_{81}a_{129}$

(167) $a_{17}a_{81} + a_{49}^2$

(168) $a_{17}a_{97} + a_{49}a_{65}$

(169) $a_{17}a_{129}^4 + a_{30}^3a_{65}a_{126}^3 + a_{30}^2a_{33}a_{62}a_{126}^3 + a_{30}^2a_{62}^2a_{97}a_{126}^2 + a_{30}a_{62}^3a_{65}a_{126}^2$

(170) $a_{17}a_{129}^2a_{193} + a_{81}a_{97}a_{145}^2$

(171) $a_{17}a_{145} + a_{81}^2$

(172) $a_{17}a_{161} + a_{49}a_{129} + a_{81}a_{97}$

(173) $a_{30}^7a_{33} + a_{49}a_{65}a_{129}$

(174) $a_{30}^7a_{81} + a_{65}a_{81}a_{145}$

(175) $a_{30}^7a_{97} + a_{30}^5a_{33}a_{62}^2 + a_{81}a_{97}a_{129}$

(176) $a_{30}^6a_{33}a_{62} + a_{65}a_{81}a_{129}$

(177) $a_{30}^6a_{62}a_{81} + a_{81}a_{97}a_{145}$

(178) $a_{30}^6a_{62}a_{97} + a_{49}a_{145}^2 + a_{81}a_{97}a_{161}$

(179) $a_{30}^6a_{65}$

(180) $a_{30}^5a_{33}a_{62}^3 + a_{49}a_{65}a_{126}a_{129} + a_{62}a_{81}a_{97}a_{129}$

(181) $a_{30}^5a_{33}a_{126} + a_{30}^5a_{62}a_{97} + a_{30}^4a_{62}^2a_{65}$

(182) $a_{30}^5a_{33}a_{193} + a_{30}^3a_{49}^2a_{62}a_{126} + a_{30}a_{49}^2a_{62}^4$

(183) $a_{30}^5a_{62}^2a_{65} + a_{30}^4a_{33}a_{62}^3 + a_{49}a_{145}^2$

(184) $a_{30}^5a_{62}^2a_{81} + a_{65}a_{129}a_{161}$

(185) $a_{30}^5a_{65}a_{126} + a_{30}^4a_{33}a_{62}a_{126} + a_{30}^4a_{62}^2a_{97} + a_{30}^3a_{62}^3a_{65}$

(186) $a_{30}^4a_{33}a_{62}^4 + a_{62}a_{81}a_{97}a_{161} + a_{65}a_{81}a_{126}a_{129}$

(187) $a_{30}^4 a_{33} a_{62}^3 a_{193} + a_{49}^2 a_{62}^7 + a_{49} a_{145}^2 a_{193} + a_{81} a_{97} a_{161} a_{193}$

(188) $a_{30}^4 a_{49}$

(189) $a_{30}^4 a_{62}^4 a_{97} + a_{30}^3 a_{62}^5 a_{65} + a_{49} a_{126} a_{145}^2$

(190) $a_{30}^3 a_{33}^2$

(191) $a_{30}^3 a_{49} a_{65}$

(192) $a_{30}^3 a_{62}^2 a_{65} a_{126} + a_{30}^2 a_{33} a_{62}^3 a_{126} + a_{30}^2 a_{62}^4 a_{97} + a_{30} a_{62}^5 a_{65}$

(193) $a_{30}^3 a_{65} a_{193} + a_{30}^2 a_{33} a_{62} a_{193} + a_{49}^2 a_{62}^2 a_{126} + a_{62}^3 a_{81}^2$

(194) $a_{30}^3 a_{129} + a_{30}^2 a_{33} a_{126} + a_{30}^2 a_{62} a_{97} + a_{30} a_{62}^2 a_{65} + a_{33} a_{62}^3$

(195) $a_{30}^2 a_{33}^2 a_{62}^5 + a_{81} a_{97} a_{129}^2$

(196) $a_{30}^2 a_{49}^2 a_{62}^2 + a_{30} a_{33}^2 a_{62}^3$

(197) $a_{30}^2 a_{49} a_{62}^5 a_{65} + a_{81} a_{97} a_{145} a_{161}$

(198) $a_{30}^2 a_{49} a_{129}$

(199) $a_{30}^2 a_{65}^2 + a_{33}^2 a_{62}^2$

(200) $a_{30}^2 a_{145} + a_{62}^2 a_{81}$

(201) $a_{30} a_{33}^2 a_{62}^6 + a_{81} a_{97} a_{145}^2$

(202) $a_{30} a_{33}^2 a_{126} + a_{30} a_{62} a_{65}^2 + a_{49}^2 a_{62}^2$

(203) $a_{30} a_{33} a_{65} + a_{30} a_{49}^2 + a_{33}^2 a_{62}$

(204) $a_{30} a_{33} a_{129} + a_{49} a_{62} a_{81} + a_{62} a_{65}^2$

(205) $a_{30} a_{49}^2 a_{62}^6 + a_{81} a_{97} a_{161}^2$

(206) $a_{30} a_{49} a_{62}^6 a_{65} + a_{65} a_{129} a_{161}^2$

(207) $a_{30} a_{49} a_{65} a_{193} + a_{62} a_{65} a_{81} a_{129}$

(208) $a_{30} a_{49} a_{81} + a_{30} a_{65}^2 + a_{33} a_{62} a_{65} + a_{49}^2 a_{62}$

(209) $a_{30} a_{49} a_{145} + a_{33} a_{62} a_{129} + a_{33} a_{65} a_{126} + a_{49}^2 a_{126} + a_{62} a_{81}^2$

(210) $a_{30} a_{62}^6 a_{65}^2 + a_{49} a_{145}^2 a_{193}$

(211) $a_{30} a_{65} a_{81} + a_{49} a_{62} a_{65}$

(212) $a_{30} a_{65} a_{129} + a_{33} a_{62} a_{129} + a_{49}^2 a_{126} + a_{62} a_{81}^2$

(213) $a_{30}a_{65}a_{145} + a_{62}a_{81}a_{97}$

(214) $a_{30}a_{81}^2 + a_{33}^2a_{126} + a_{62}a_{65}^2$

(215) $a_{30}a_{81}a_{97} + a_{62}a_{65}a_{81}$

(216) $a_{30}a_{81}a_{129} + a_{49}a_{62}a_{129} + a_{49}a_{65}a_{126} + a_{62}a_{81}a_{97}$

(217) $a_{30}a_{81}a_{145} + a_{49}a_{62}a_{145} + a_{49}a_{81}a_{126} + a_{62}a_{65}a_{129} + a_{62}a_{97}^2 + a_{65}^2a_{126}$

(218) $a_{30}a_{97}^2 + a_{49}^2a_{126} + a_{62}a_{81}^2$

(219) $a_{30}a_{97}a_{129} + a_{62}a_{65}a_{129} + a_{65}^2a_{126}$

(220) $a_{30}a_{97}a_{145} + a_{62}a_{65}a_{145}$

(221) $a_{30}a_{97}a_{193} + a_{62}a_{65}a_{193} + a_{97}^2a_{126}$

(222) $a_{30}a_{129}^2 + a_{33}a_{126}a_{129} + a_{62}a_{81}a_{145} + a_{62}a_{97}a_{129} + a_{81}^2a_{126}$

(223) $a_{30}a_{129}a_{145} + a_{62}a_{81}a_{161} + a_{81}a_{97}a_{126}$

(224) $a_{30}a_{145}^2 + a_{62}a_{97}a_{161} + a_{62}a_{129}^2 + a_{65}a_{126}a_{129} + a_{97}^2a_{126}$

(225) $a_{30}a_{161} + a_{62}a_{129} + a_{65}a_{126}$

(226) a_{33}^3

(227) $a_{33}^2a_{62}^8 + a_{62}a_{97}a_{129}^2a_{145} + a_{81}a_{97}a_{126}a_{129}^2$

(228) $a_{33}^2a_{65}$

(229) $a_{33}^2a_{129}$

(230) $a_{33}^2a_{193}$

(231) $a_{33}a_{49}$

(232) $a_{33}a_{62}a_{65}a_{129}$

(233) $a_{33}a_{62}a_{129}^2 + a_{33}a_{65}a_{126}a_{129} + a_{62}a_{65}a_{81}a_{145}$

(234) $a_{33}a_{65}^2$

(235) $a_{33}a_{65}a_{129}^5$

(236) $a_{33}a_{65}a_{193} + a_{65}a_{81}a_{145}$

(237) $a_{33}a_{81} + a_{49}a_{65}$

(238) $a_{33}a_{97} + a_{49}a_{81}$

(239) $a_{33}a_{129}^6$

(240) $a_{33}a_{129}^2a_{193} + a_{81}a_{97}a_{145}a_{161}$

(241) $a_{33}a_{145} + a_{49}a_{129} + a_{81}a_{97}$

(242) $a_{33}a_{161} + a_{49}a_{145} + a_{97}^2$

(243) a_{49}^3

(244) $a_{49}^2a_{62}^8 + a_{62}a_{81}a_{129}^2a_{193} + a_{81}a_{97}a_{126}a_{145}^2$

(245) $a_{49}^2a_{65}$

(246) $a_{49}^2a_{81}$

(247) $a_{49}^2a_{129}$

(248) $a_{49}^2a_{145}$

(249) $a_{49}^2a_{161}$

(250) $a_{49}^2a_{193}$

(251) $a_{49}a_{62}^7a_{65}a_{129} + a_{81}a_{97}a_{145}a_{161}a_{193}$

(252) $a_{49}a_{62}a_{145}^2 + a_{62}a_{81}a_{129}^2$

(253) $a_{49}a_{62}a_{161} + a_{62}a_{65}a_{145} + a_{62}a_{81}a_{129}$

(254) $a_{49}a_{65}^2$

(255) $a_{49}a_{65}a_{81}$

(256) $a_{49}a_{65}a_{129}a_{193} + a_{81}a_{97}a_{129}^2$

(257) $a_{49}a_{65}a_{145}$

(258) $a_{49}a_{65}a_{161} + a_{65}a_{81}a_{129}$

(259) $a_{49}a_{81}^2$

(260) $a_{49}a_{81}a_{129}$

(261) $a_{49}a_{81}a_{145} + a_{65}a_{81}a_{129}$

(262) $a_{49}a_{81}a_{161} + a_{65}a_{81}a_{145}$

(263) $a_{49}a_{81}a_{193} + a_{81}a_{97}a_{145}$

(264) $a_{49}a_{97} + a_{65}a_{81}$

(265) $a_{49}a_{129}^2$

(266) $a_{49}a_{129}a_{145} + a_{81}a_{97}a_{145}$

(267) $a_{49}a_{129}a_{161} + a_{49}a_{145}^2 + a_{81}a_{97}a_{161}$

(268) $a_{49}a_{145}^3$

(269) $a_{49}a_{145}^2a_{193}^2$

(270) $a_{49}a_{145}a_{161} + a_{65}a_{129}a_{161}$

(271) $a_{62}^7a_{65}a_{81}a_{129} + a_{65}a_{129}a_{161}^2a_{193}$

(272) $a_{62}^7a_{81}a_{97}a_{129}^2 + a_{81}a_{97}a_{145}a_{161}a_{193}^2$

(273) $a_{62}^7a_{81}a_{129}^3 + a_{65}a_{129}a_{161}^2a_{193}^2$

(274) $a_{62}a_{65}a_{129}^2 + a_{62}a_{81}a_{97}a_{145}$

(275) $a_{62}a_{65}a_{145}^2 + a_{62}a_{97}a_{129}^2$

(276) $a_{62}a_{65}a_{161} + a_{62}a_{97}a_{129}$

(277) $a_{62}a_{81}a_{97}a_{145}^2 + a_{62}a_{81}a_{129}^3$

(278) $a_{62}a_{81}a_{129}^4$

(279) $a_{62}a_{81}a_{129}^3a_{193}$

(280) $a_{62}a_{81}a_{129}^2a_{193}^2$

(281) $a_{62}a_{81}a_{129}a_{145}$

(282) $a_{62}a_{81}a_{129}a_{161} + a_{62}a_{81}a_{145}^2 + a_{62}a_{97}a_{129}a_{145}$

(283) $a_{62}a_{81}a_{145}^3 + a_{62}a_{129}^4 + a_{65}a_{126}a_{129}^3$

(284) $a_{62}a_{81}a_{145}a_{161} + a_{62}a_{97}a_{129}a_{161} + a_{62}a_{129}^3 + a_{65}a_{126}a_{129}^2 + a_{81}a_{97}a_{126}a_{145}$

(285) $a_{62}a_{81}a_{161}^2 + a_{62}a_{129}^2a_{145}$

(286) $a_{62}a_{97}a_{129}^4$

(287) $a_{62}a_{97}a_{129}^3a_{145}$

(288) $a_{62}a_{97}a_{129}^3a_{193} + a_{62}a_{129}^4a_{161}$

(289) $a_{62}a_{97}a_{129}^2a_{145}a_{193}$

(290) $a_{62}a_{97}a_{129}^2a_{161} + a_{62}a_{129}^4 + a_{65}a_{126}a_{129}^3$

(291) $a_{62}a_{97}a_{129}a_{145}^2 + a_{62}a_{129}^4 + a_{65}a_{126}a_{129}^3$

(292) $a_{62}a_{97}a_{161}^2 + a_{62}a_{129}^2a_{161} + a_{62}a_{129}a_{145}^2 + a_{65}a_{126}a_{129}a_{161} + a_{65}a_{126}a_{145}^2$

(293) $a_{62}a_{129}^5 + a_{65}a_{126}a_{129}^4$

(294) $a_{62}a_{129}^4a_{145}$

(295) $a_{62}a_{129}^4a_{161}^2$

(296) $a_{62}a_{129}^4a_{161}a_{193}^2$

(297) $a_{62}a_{129}^4a_{193}^3$

(298) $a_{62}a_{129}^3a_{145}^2$

(299) $a_{62}a_{129}^2a_{145}^4$

(300) a_{65}^3

(301) $a_{65}^2a_{81}$

(302) $a_{65}^2a_{129}$

(303) $a_{65}^2a_{145}$

(304) $a_{65}^2a_{161}$

(305) $a_{65}^2a_{193}$

(306) $a_{65}a_{81}^2$

(307) $a_{65}a_{81}a_{129}^2$

(308) $a_{65}a_{81}a_{129}a_{193} + a_{81}a_{97}a_{145}^2$

(309) $a_{65}a_{81}a_{145}^2 + a_{81}a_{97}a_{129}^2$

(310) $a_{65}a_{81}a_{145}a_{193} + a_{81}a_{97}a_{145}a_{161}$

(311) $a_{65}a_{81}a_{161} + a_{81}a_{97}a_{129}$

(312) $a_{65}a_{97} + a_{81}^2$

(313) $a_{65}a_{129}^6$

(314) $a_{65}a_{129}^2a_{161} + a_{81}a_{97}a_{145}a_{161}$

(315) $a_{65}a_{129}^2a_{193} + a_{81}a_{97}a_{145}a_{193}$

(316) $a_{65}a_{129}a_{145} + a_{81}a_{97}a_{161}$

(317) $a_{65}a_{129}a_{161}^3 + a_{81}a_{97}a_{145}a_{161}a_{193}$

(318) $a_{65}a_{129}a_{161}^2a_{193}^3$

(319) a_{81}^3

(320) $a_{81}^2a_{97}$

(321) $a_{81}^2a_{129}$

(322) $a_{81}^2a_{145}$

(323) $a_{81}^2a_{161}$

(324) $a_{81}^2a_{193}$

(325) $a_{81}a_{97}^2$

(326) $a_{81}a_{97}a_{129}^3$

(327) $a_{81}a_{97}a_{129}a_{145}$

(328) $a_{81}a_{97}a_{129}a_{161} + a_{81}a_{97}a_{145}^2$

(329) $a_{81}a_{97}a_{129}a_{193} + a_{81}a_{97}a_{161}^2$

(330) $a_{81}a_{97}a_{145}^3$

(331) $a_{81}a_{97}a_{145}^2a_{161}$

(332) $a_{81}a_{97}a_{145}^2a_{193}$

(333) $a_{81}a_{97}a_{145}a_{161}^2$

(334) $a_{81}a_{97}a_{145}a_{161}a_{193}^3$

(335) $a_{81}a_{97}a_{161}^3$

(336) $a_{81}a_{97}a_{161}^2a_{193}$

(337) a_{97}^3

(338) $a_{97}^2a_{129}$

(339) $a_{97}^2a_{145}$

(340) $a_{97}^2a_{161}$

References

CW. Crossley, M. D.; Whitehouse, Sarah; 'On conjugation invariants in the dual Steenrod algebra' Proc. Amer. Math. Soc. **128** (2000), no. 9, 2809–2818.