GENERATORS OF SUBCONES OF THE NEF CONE OF A CUBIC SURFACE

All of these tables were generated using the PORTA software package, written by Thomas Christof and Andreas Loebel in 1997.

We begin by defining the notation used in these tables. Let $\phi\colon X \to \mathbb{P}^2$ be the blowup of $\mathbb{P}^2$ at six rational points in general position, and let $E_1, \dots, E_6$ be the exceptional divisors of ϕ. We define the following linear equivalence classes on X:

- $L = \phi^* \mathcal{O}(1)$
- $L_i = L - E_i$, the strict transform of a line through $P_i = \phi(E_i)$
- $L_{ij} = 2L - (\sum E_n) + E_i + E_j$, the strict transform of a conic through the four points P_n with $n \neq i, j$
- $B_i = 3L - (\sum E_n) - E_i$, the strict transform of a cubic curve through all six points P_n, with a node at P_i.

Let h be the class of a hyperplane in the embedding $X \subset \mathbb{P}^3$. For any line ℓ on X, the hyperplanes containing ℓ give (after removing ℓ) a base-point-free pencil on X. The classes $\{L_i, L_{ij}, B_i\}$ defined above are the 27 pencils coming from the lines. In addition, for any point x on X let C_x be the intersection of X with its tangent plane at x (so C_x has class h). If x does not lie on a line, then C_x is a plane cubic curve with one double point, at x.

Let Γ be the nef cone of X, and S be the set of 27 divisor classes $\{L_i, L_{ij}, B_i\}$ as i and j range over all possible values. For each element C in S, we define the subcone $\Gamma(C)$ by:

$$\Gamma(C) = \left\{ D \in \Gamma \mid D.C = \min_{C' \in S} \{D.C'\} \text{ and } D.C \leqslant (D.h)/2 \right\}.$$

Further define the subcone $\Gamma(h)$ to be:

$$\Gamma(h) = \left\{ D \in \Gamma \mid (D.h)/2 \leqslant \min_{C' \in S} \{D.C'\} \right\}.$$

It is clear that Γ is the union of these 28 subcones.

In each of the tables in this file, the first column is a numerical identifier of the vector in that row. The subsequent columns represent the coefficients of the vector with respect to the basis $\{L, E_1, \dots, L_6\}$ of the Néron-Severi group of X. Thus, vector number 1 in Table 1 is the divisor class $2L - E_1 - E_2 - E_3$. Each of the cones has 99 generators. There is no correspondence or relation between rows in different tables with the same numerical identifier.

Table 1, of generators of the nef cone, is reproducing information that has been well known for some time, of course. It was calculated for these tables by finding generators for the cone obtained as the intersection of the half-spaces corresponding to non-negative intersection with each of the 27 lines on the cubic surface. The other tables were generated in a similar way. For instance, Table 2, of generators of the cone $\Gamma(L_1)$, was generated by using the half-spaces defining Γ, in addition to the half-spaces corresponding to the intersection inequalities described above.

Table 1: Generators of the nef cone Γ of a smooth cubic surface

#	L	E_1	E_2	E_3	E_4	E_5	E_6
1	2	-1	-1	-1	0	0	0
2	2	-1	-1	0	-1	0	0
3	2	-1	-1	0	0	-1	0
4	2	-1	-1	0	0	0	-1
5	2	-1	0	-1	-1	0	0
6	2	-1	0	-1	0	-1	0
7	2	-1	0	-1	0	0	-1
8	2	-1	0	0	-1	-1	0
9	2	-1	0	0	-1	0	-1
10	2	-1	0	0	0	-1	-1
11	1	0	0	0	0	0	0
12	3	-2	-1	-1	-1	-1	0
13	3	-2	-1	-1	-1	0	-1
14	3	-2	-1	-1	0	-1	-1
15	3	-2	-1	0	-1	-1	-1
16	3	-2	0	-1	-1	-1	-1
17	1	-1	0	0	0	0	0
18	1	0	-1	0	0	0	0
19	1	0	0	-1	0	0	0
20	1	0	0	0	-1	0	0
21	1	0	0	0	0	-1	0
22	1	0	0	0	0	0	-1
23	2	0	-1	-1	-1	0	0
24	2	0	-1	-1	0	-1	0
25	2	0	-1	-1	0	0	-1
26	2	0	-1	0	-1	-1	0
27	2	0	-1	0	-1	0	-1
28	2	0	-1	0	0	-1	-1
29	2	0	0	-1	-1	-1	0
30	2	0	0	-1	-1	0	-1
31	2	0	0	-1	0	-1	-1
32	2	0	0	0	-1	-1	-1
33	2	-1	-1	-1	-1	0	0
34	2	-1	-1	-1	0	-1	0
35	2	-1	-1	-1	0	0	-1
36	2	-1	-1	0	-1	-1	0
37	2	-1	-1	0	-1	0	-1
38	2	-1	-1	0	0	-1	-1
39	2	-1	0	-1	-1	-1	0
40	2	-1	0	-1	-1	0	-1
41	2	-1	0	-1	0	-1	-1
42	2	-1	0	0	-1	-1	-1
43	2	0	-1	-1	-1	-1	0
44	2	0	-1	-1	-1	0	-1
45	2	0	-1	-1	0	-1	-1
46	2	0	-1	0	-1	-1	-1
47	2	0	0	-1	-1	-1	-1
48	3	-1	-2	-1	-1	-1	0
49	3	-1	-2	-1	-1	0	-1
50	3	-1	-2	-1	0	-1	-1
51	3	-1	-2	0	-1	-1	-1
52	3	-1	-1	-2	-1	-1	0
53	3	-1	-1	-2	-1	0	-1
54	3	-1	-1	-2	0	-1	-1
55	3	-1	-1	-1	-2	-1	0
56	3	-1	-1	-1	-2	0	-1
57	3	-1	-1	-1	-1	-2	0
58	3	-1	-1	-1	-1	0	-2
59	3	-1	-1	-1	0	-2	-1
60	3	-1	-1	-1	0	-1	-2
61	3	-1	-1	0	-2	-1	-1
62	3	-1	-1	0	-1	-2	-1
63	3	-1	-1	0	-1	-1	-2
64	3	-1	0	-2	-1	-1	-1
65	3	-1	0	-1	-2	-1	-1
66	3	-1	0	-1	-1	-2	-1
67	3	-1	0	-1	-1	-1	-2
68	3	0	-2	-1	-1	-1	-1
69	3	0	-1	-2	-1	-1	-1
70	3	0	-1	-1	-2	-1	-1
71	3	0	-1	-1	-1	-2	-1
72	3	0	-1	-1	-1	-1	-2
73	3	-2	-1	-1	-1	-1	-1
74	3	-1	-2	-1	-1	-1	-1
75	3	-1	-1	-2	-1	-1	-1
76	3	-1	-1	-1	-2	-1	-1
77	3	-1	-1	-1	-1	-2	-1
78	3	-1	-1	-1	-1	-1	-2
79	4	-2	-2	-2	-1	-1	-1
80	4	-2	-2	-1	-2	-1	-1
81	4	-2	-2	-1	-1	-2	-1
82	4	-2	-2	-1	-1	-1	-2
83	4	-2	-1	-2	-2	-1	-1
84	4	-2	-1	-2	-1	-2	-1
85	4	-2	-1	-2	-1	-1	-2
86	4	-2	-1	-1	-2	-2	-1
87	4	-2	-1	-1	-2	-1	-2
88	4	-2	-1	-1	-1	-2	-2
89	4	-1	-2	-2	-2	-1	-1
90	4	-1	-2	-2	-1	-2	-1
91	4	-1	-2	-2	-1	-1	-2
92	4	-1	-2	-1	-2	-2	-1
93	4	-1	-2	-1	-2	-1	-2
94	4	-1	-2	-1	-1	-2	-2
95	4	-1	-1	-2	-2	-2	-1
96	4	-1	-1	-2	-2	-1	-2
97	4	-1	-1	-2	-1	-2	-2
98	4	-1	-1	-1	-2	-2	-2
99	5	-2	-2	-2	-2	-2	-2

Remarks on other tables. In Table 2 which follows, we use D_n to refer to the divisor class represented by row n of Table 2. For any point $x \in X$ not on a (-1)-curve, the unique curve $F = F_{x,L_1}$ in the pencil L_1 passing through x is smooth and irreducible. In each line of the table "Reason" is a — very brief! — justification of why F is a Seshadri curve for x with respect to D_n.

For instance, in row 1 of Table 2, the "Reason" is $L_1.D_1 = 1$, and thus $F.D_1 = L_1.D_1 = 1$. We claim that for the divisors D_i, ϵ_x is always at least one if it is nonzero. To see this, notice that the generators of the nef cone (see Table 1) are all either morphisms to $\mathbb{P}^1$ corresponding to pencils of conics on the cubic surface, or else morphisms to $\mathbb{P}^2$ that are the blowing down of six pairwise disjoint (-1)-curves. In both cases, the Seshadri constant is easily seen to be either zero or at least one. It is straightforward to check that all the generators listed in Table 2 are non-negative integer linear combinations of the generators of the nef cones, and therefore (by [1, Proposition 2.11(b)]) enjoy the same property: for any point x, the Seshadri constant $\epsilon_x(D_i)$ is either zero or else is at least one.

By assumption, x does not lie on any (-1)-curve, which are the only curves contracted by any D_i (except for $D_{18} = L_1$, for which $\epsilon = 0$ for all points). Therefore, since F has degree 1 with respect to D_1, F is a Seshadri curve for x with respect to D_1.

As a second example, in row 29 of Table 2, the comment "$L + L_{56}$" means that the divisor D_{29} represented by that row is the sum of L and L_{56}. Any curve that has nonzero intersection with L must have $L.C/\mathrm{mult}_x(C) \geqslant 1$, for any x not lying on a (-1)-curve, since L is an isomorphism away from (-1)-curves. Similarly, any curve not contracted by L_{56} must also satisfy $L_{56}.C/\mathrm{mult}_x(C) \geqslant 1$, so any curve not contracted by L_{56} or L must satisfy $(L+L_{56}).C/\mathrm{mult}_x(C) \geqslant 2$. If C is contracted by L_{56}, then it is either a (-1)-curve, or else it is an element of the divisor class L_{56} itself, in which case it satisfies $(L+L_{56}).C/\mathrm{mult}_x(C) = 2$ by direct calculation. In all cases, since x does not lie on a (-1)-curve, we see that $\epsilon_x(L+L_{56}) \geqslant 2$, and since $L_1.L = L_1.L_{56} = 1$, we conclude that $\epsilon_x(L + L_{56}) = 2$, and so the curve in the class L_1 through x is a Seshadri curve for x with respect to $D_{29} = L + L_{56}$. Similar arguments explain the other reasons of the form "$A + B$" or "$A + B + C$".

In light of these arguments, for Table 2, it is useful to know that L_1 has intersection number one with the divisors L, B_1, L_i for $i \neq 1$, and L_{ij} for $i, j \neq 1$.

In Table 3, the rightmost column of row n contains a divisor class $C \in S$ such that G_n (the divisor corresponding to the nth row of Table 3) is also a generator of the subcone $\Gamma(C)$. From the definition of the cones $\Gamma(C)$ and $\Gamma(h)$, this implies that $G_n.C = (G_n.h)/2$. As explained in the proof of [1, Theorem 4.7], this provides a verification that C_x is a Seshadri curve for x with respect to G_n.

Tables 4 and 5 are simply lists of generators of the named subcones. By permuting the indices $1, \ldots, 6$, Tables 2, 4, and 5 yield generators for all the subcones $\Gamma(L_i)$, $\Gamma(B_i)$ and $\Gamma(L_{ij})$.

Table 2: Generators of the cone $\Gamma(L_1)$

#	L	E_1	E_2	E_3	E_4	E_5	E_6	Reason
1	4	-3	-1	-1	-1	-1	-1	$L_1.D_1 = 1$
2	2	-1	-1	0	0	0	0	$L_1.D_2 = 1$
3	2	-1	0	-1	0	0	0	$L_1.D_3 = 1$
4	2	-1	0	0	-1	0	0	$L_1.D_4 = 1$
5	2	-1	0	0	0	-1	0	$L_1.D_5 = 1$
6	2	-1	0	0	0	0	-1	$L_1.D_6 = 1$
7	1	0	0	0	0	0	0	$L_1.D_7 = 1$
8	3	-2	-1	-1	-1	0	0	$L_1.D_8 = 1$
9	3	-2	-1	-1	0	-1	0	$L_1.D_9 = 1$
10	3	-2	-1	-1	0	0	-1	$L_1.D_{10} = 1$
11	3	-2	-1	0	-1	-1	0	$L_1.D_{11} = 1$
12	3	-2	-1	0	-1	0	-1	$L_1.D_{12} = 1$
13	3	-2	-1	0	0	-1	-1	$L_1.D_{13} = 1$
14	3	-2	0	-1	-1	-1	0	$L_1.D_{14} = 1$
15	3	-2	0	-1	-1	0	-1	$L_1.D_{15} = 1$
16	3	-2	0	-1	0	-1	-1	$L_1.D_{16} = 1$
17	3	-2	0	0	-1	-1	-1	$L_1.D_{17} = 1$
18	1	-1	0	0	0	0	0	$L_1.D_{18} = 0$
19	2	-1	-1	-1	0	0	0	$L_1.D_{19} = 1$
20	2	-1	-1	0	-1	0	0	$L_1.D_{20} = 1$
21	2	-1	-1	0	0	-1	0	$L_1.D_{21} = 1$
22	2	-1	-1	0	0	0	-1	$L_1.D_{22} = 1$
23	2	-1	0	-1	-1	0	0	$L_1.D_{23} = 1$
24	2	-1	0	-1	0	-1	0	$L_1.D_{24} = 1$
25	2	-1	0	-1	0	0	-1	$L_1.D_{25} = 1$
26	2	-1	0	0	-1	-1	0	$L_1.D_{26} = 1$
27	2	-1	0	0	-1	0	-1	$L_1.D_{27} = 1$
28	2	-1	0	0	0	-1	-1	$L_1.D_{28} = 1$
29	3	-1	-1	-1	-1	0	0	$L + L_{56}$
30	3	-1	-1	-1	0	-1	0	$L + L_{46}$
31	3	-1	-1	-1	0	0	-1	$L + L_{45}$
32	3	-1	-1	0	-1	-1	0	$L + L_{36}$
33	3	-1	-1	0	-1	0	-1	$L + L_{35}$
34	3	-1	-1	0	0	-1	-1	$L + L_{34}$
35	3	-1	0	-1	-1	-1	0	$L + L_{26}$
36	3	-1	0	-1	-1	0	-1	$L + L_{25}$
37	3	-1	0	-1	0	-1	-1	$L + L_{24}$
38	3	-1	0	0	-1	-1	-1	$L + L_{23}$
39	3	-1	-1	-1	-1	-1	0	$L_2 + L_{26}$
40	3	-1	-1	-1	-1	0	-1	$L_2 + L_{25}$
41	3	-1	-1	-1	0	-1	-1	$L_2 + L_{24}$
42	3	-1	-1	0	-1	-1	-1	$L_2 + L_{23}$
43	3	-1	0	-1	-1	-1	-1	$L_3 + L_{23}$
44	4	-1	-1	-1	-1	-1	-1	$L_{23} + L_2 + L_3$
45	3	-2	-1	-1	-1	-1	0	$L_1.D_{45} = 1$
46	3	-2	-1	-1	-1	0	-1	$L_1.D_{46} = 1$
47	3	-2	-1	-1	0	-1	-1	$L_1.D_{47} = 1$
48	3	-2	-1	0	-1	-1	-1	$L_1.D_{48} = 1$
49	3	-2	0	-1	-1	-1	-1	$L_1.D_{49} = 1$
50	4	-2	-2	-1	-1	-1	0	$D_{45} + L_2$
51	4	-2	-2	-1	-1	0	-1	$D_{46} + L_2$
52	4	-2	-2	-1	0	-1	-1	$D_{47} + L_2$
53	4	-2	-2	0	-1	-1	-1	$D_{48} + L_2$
54	4	-2	-1	-2	-1	-1	0	$D_{45} + L_3$
55	4	-2	-1	-2	-1	0	-1	$D_{46} + L_3$
56	4	-2	-1	-2	0	-1	-1	$D_{47} + L_3$
57	4	-2	-1	-1	-2	-1	0	$D_{45} + L_4$
58	4	-2	-1	-1	-2	0	-1	$D_{46} + L_4$
59	4	-2	-1	-1	-1	-2	0	$D_{45} + L_5$
60	4	-2	-1	-1	-1	0	-2	$D_{46} + L_6$
61	4	-2	-1	-1	0	-2	-1	$D_{47} + L_5$
62	4	-2	-1	-1	0	-1	-2	$D_{47} + L_6$
63	4	-2	-1	0	-2	-1	-1	$D_{48} + L_4$
64	4	-2	-1	0	-1	-2	-1	$D_{48} + L_5$
65	4	-2	-1	0	-1	-1	-2	$D_{48} + L_6$
66	4	-2	0	-2	-1	-1	-1	$D_{49} + L_3$
67	4	-2	0	-1	-2	-1	-1	$D_{49} + L_4$
68	4	-2	0	-1	-1	-2	-1	$D_{49} + L_5$
69	4	-2	0	-1	-1	-1	-2	$D_{49} + L_6$
70	4	-2	-2	-1	-1	-1	-1	$B_1 + L_2$
71	4	-2	-1	-2	-1	-1	-1	$B_1 + L_3$
72	4	-2	-1	-1	-2	-1	-1	$B_1 + L_4$
73	4	-2	-1	-1	-1	-2	-1	$B_1 + L_5$
74	4	-2	-1	-1	-1	-1	-2	$B_1 + L_6$
75	5	-2	-2	-2	-1	-1	-1	$L_3 + L_{34} + L_{56}$
76	5	-2	-2	-1	-2	-1	-1	$L_2 + L_{23} + L_{56}$
77	5	-2	-2	-1	-1	-2	-1	$L_2 + L_{23} + L_{46}$
78	5	-2	-2	-1	-1	-1	-2	$L_2 + L_{23} + L_{45}$
79	5	-2	-1	-2	-2	-1	-1	$L_3 + L_{23} + L_{56}$
80	5	-2	-1	-2	-1	-2	-1	$L_3 + L_{23} + L_{46}$
81	5	-2	-1	-2	-1	-1	-2	$L_3 + L_{23} + L_{45}$
82	5	-2	-1	-1	-2	-2	-1	$L_4 + L_{23} + L_{46}$
83	5	-2	-1	-1	-2	-1	-2	$L_4 + L_{23} + L_{45}$
84	5	-2	-1	-1	-1	-2	-2	$L_5 + L_{23} + L_{45}$
85	5	-3	-2	-2	-1	-1	-1	$D_{45} + L_{45}$
86	5	-3	-2	-1	-2	-1	-1	$D_{45} + L_{35}$
87	5	-3	-2	-1	-1	-2	-1	$D_{45} + L_{34}$
88	5	-3	-2	-1	-1	-1	-2	$D_{46} + L_{34}$
89	5	-3	-1	-2	-2	-1	-1	$D_{45} + L_{25}$
90	5	-3	-1	-2	-1	-2	-1	$D_{45} + L_{24}$
91	5	-3	-1	-2	-1	-1	-2	$D_{46} + L_{24}$
92	5	-3	-1	-1	-2	-2	-1	$D_{45} + L_{23}$
93	5	-3	-1	-1	-2	-1	-2	$D_{46} + L_{23}$
94	5	-3	-1	-1	-1	-2	-2	$D_{47} + L_{23}$
95	6	-3	-2	-2	-2	-2	-1	$L_{23} + L_{46} + L_{56}$
96	6	-3	-2	-2	-2	-1	-2	$L_{23} + L_{45} + L_{56}$
97	6	-3	-2	-2	-1	-2	-2	$L_{23} + L_{45} + L_{46}$
98	6	-3	-2	-1	-2	-2	-2	$L_{23} + L_{34} + L_{56}$
99	6	-3	-1	-2	-2	-2	-2	$L_{23} + L_{24} + L_{56}$

Table 3: Generators of the cone $\Gamma(h)$

#	L	E_1	E_2	E_3	E_4	E_5	E_6	Divisor Class
1	8	-3	-3	-3	-3	-3	-3	B_1
2	4	-1	-1	-1	-1	-1	-1	L_1
3	4	-2	-2	-1	-1	-1	-1	L_1
4	4	-2	-1	-2	-1	-1	-1	L_1
5	4	-2	-1	-1	-2	-1	-1	L_1
6	4	-2	-1	-1	-1	-2	-1	L_1
7	4	-2	-1	-1	-1	-1	-2	L_1
8	4	-1	-2	-2	-1	-1	-1	L_2
9	4	-1	-2	-1	-2	-1	-1	L_2
10	4	-1	-2	-1	-1	-2	-1	L_2
11	4	-1	-2	-1	-1	-1	-2	L_2
12	4	-1	-1	-2	-2	-1	-1	L_3
13	4	-1	-1	-2	-1	-2	-1	L_3
14	4	-1	-1	-2	-1	-1	-2	L_3
15	4	-1	-1	-1	-2	-2	-1	L_4
16	4	-1	-1	-1	-2	-1	-2	L_4
17	4	-1	-1	-1	-1	-2	-2	L_5
18	5	-2	-2	-2	-1	-1	-1	L_1
19	5	-2	-2	-1	-2	-1	-1	L_1
20	5	-2	-2	-1	-1	-2	-1	L_1
21	5	-2	-2	-1	-1	-1	-2	L_1
22	5	-2	-1	-2	-2	-1	-1	L_1
23	5	-2	-1	-2	-1	-2	-1	L_1
24	5	-2	-1	-2	-1	-1	-2	L_1
25	5	-2	-1	-1	-2	-2	-1	L_1
26	5	-2	-1	-1	-2	-1	-2	L_1
27	5	-2	-1	-1	-1	-2	-2	L_1
28	5	-1	-2	-2	-2	-1	-1	L_2
29	5	-1	-2	-2	-1	-2	-1	L_2
30	5	-1	-2	-2	-1	-1	-2	L_2
31	5	-1	-2	-1	-2	-2	-1	L_2
32	5	-1	-2	-1	-2	-1	-2	L_2
33	5	-1	-2	-1	-1	-2	-2	L_2
34	5	-1	-1	-2	-2	-2	-1	L_3
35	5	-1	-1	-2	-2	-1	-2	L_3
36	5	-1	-1	-2	-1	-2	-2	L_3
37	5	-1	-1	-1	-2	-2	-2	L_4
38	7	-3	-3	-3	-2	-2	-2	B_1
39	7	-3	-3	-2	-3	-2	-2	B_1
40	7	-3	-3	-2	-2	-3	-2	B_1
41	7	-3	-3	-2	-2	-2	-3	B_1
42	7	-3	-2	-3	-3	-2	-2	B_1
43	7	-3	-2	-3	-2	-3	-2	B_1
44	7	-3	-2	-3	-2	-2	-3	B_1
45	7	-3	-2	-2	-3	-3	-2	B_1
46	7	-3	-2	-2	-3	-2	-3	B_1
47	7	-3	-2	-2	-2	-3	-3	B_1
48	7	-2	-3	-3	-3	-2	-2	B_2
49	7	-2	-3	-3	-2	-3	-2	B_2
50	7	-2	-3	-3	-2	-2	-3	B_2
51	7	-2	-3	-2	-3	-3	-2	B_2
52	7	-2	-3	-2	-3	-2	-3	B_2
53	7	-2	-3	-2	-2	-3	-3	B_2
54	7	-2	-2	-3	-3	-3	-2	B_3
55	7	-2	-2	-3	-3	-2	-3	B_3
56	7	-2	-2	-3	-2	-3	-3	B_3
57	7	-2	-2	-2	-3	-3	-3	B_4
58	6	-3	-2	-2	-2	-2	-1	B_1
59	6	-3	-2	-2	-2	-1	-2	B_1
60	6	-3	-2	-2	-1	-2	-2	B_1
61	6	-3	-2	-1	-2	-2	-2	B_1
62	6	-3	-1	-2	-2	-2	-2	B_1
63	6	-2	-3	-2	-2	-2	-1	B_2
64	6	-2	-3	-2	-2	-1	-2	B_2
65	6	-2	-3	-2	-1	-2	-2	B_2
66	6	-2	-3	-1	-2	-2	-2	B_2
67	6	-2	-2	-3	-2	-2	-1	B_3
68	6	-2	-2	-3	-2	-1	-2	B_3
69	6	-2	-2	-3	-1	-2	-2	B_3
70	6	-2	-2	-2	-3	-2	-1	B_4
71	6	-2	-2	-2	-3	-1	-2	B_4
72	6	-2	-2	-2	-2	-3	-1	B_5
73	6	-2	-2	-2	-2	-1	-3	B_6
74	6	-2	-2	-2	-1	-3	-2	B_5
75	6	-2	-2	-2	-1	-2	-3	B_6
76	6	-2	-2	-1	-3	-2	-2	B_4
77	6	-2	-2	-1	-2	-3	-2	B_5
78	6	-2	-2	-1	-2	-2	-3	B_6
79	6	-2	-1	-3	-2	-2	-2	B_3
80	6	-2	-1	-2	-3	-2	-2	B_4
81	6	-2	-1	-2	-2	-3	-2	B_5
82	6	-2	-1	-2	-2	-2	-3	B_6
83	6	-1	-3	-2	-2	-2	-2	B_2
84	6	-1	-2	-3	-2	-2	-2	B_3
85	6	-1	-2	-2	-3	-2	-2	B_4
86	6	-1	-2	-2	-2	-3	-2	B_5
87	6	-1	-2	-2	-2	-2	-3	B_6
88	5	-2	-2	-2	-2	-2	-1	B_1
89	5	-2	-2	-2	-2	-1	-2	B_1
90	5	-2	-2	-2	-1	-2	-2	B_1
91	5	-2	-2	-1	-2	-2	-2	B_1
92	5	-2	-1	-2	-2	-2	-2	B_1
93	5	-1	-2	-2	-2	-2	-2	B_2
94	3	-1	-1	-1	-1	-1	0	L_1
95	3	-1	-1	-1	-1	0	-1	L_1
96	3	-1	-1	-1	0	-1	-1	L_1
97	3	-1	-1	0	-1	-1	-1	L_1
98	3	-1	0	-1	-1	-1	-1	L_1
99	3	0	-1	-1	-1	-1	-1	L_2

Table 4: Generators of the cone $\Gamma(B_1)$

#	L	E_1	E_2	E_3	E_4	E_5	E_6	#	L	E_1	E_2	E_3	E_4	E_5	E_6	#	L	E_1	E_2	E_3	E_4	E_5	E_6
1	4	-3	-1	-1	-1	-1	-1	**34**	4	-2	-1	-2	-1	-1	-2	**67**	6	-3	-2	-2	-3	-1	-2
2	3	-2	-1	-1	-1	-1	-1	**35**	4	-2	-1	-1	-2	-2	-1	**68**	6	-3	-2	-2	-2	-3	-1
3	5	-3	-2	-2	-2	-1	-1	**36**	4	-2	-1	-1	-2	-1	-2	**69**	6	-3	-2	-2	-2	-1	-3
4	5	-3	-2	-2	-1	-2	-1	**37**	4	-2	-1	-1	-1	-2	-2	**70**	6	-3	-2	-2	-1	-3	-2
5	5	-3	-2	-2	-1	-1	-2	**38**	5	-2	-2	-2	-2	-2	-1	**71**	6	-3	-2	-2	-1	-2	-3
6	5	-3	-2	-1	-2	-2	-1	**39**	5	-2	-2	-2	-2	-1	-2	**72**	6	-3	-2	-1	-3	-2	-2
7	5	-3	-2	-1	-2	-1	-2	**40**	5	-2	-2	-2	-1	-2	-2	**73**	6	-3	-2	-1	-2	-3	-2
8	5	-3	-2	-1	-1	-2	-2	**41**	5	-2	-2	-1	-2	-2	-2	**74**	6	-3	-2	-1	-2	-2	-3
9	5	-3	-1	-2	-2	-2	-1	**42**	5	-2	-1	-2	-2	-2	-2	**75**	6	-3	-1	-3	-2	-2	-2
10	5	-3	-1	-2	-2	-1	-2	**43**	5	-2	-2	-2	-2	-2	-2	**76**	6	-3	-1	-2	-3	-2	-2
11	5	-3	-1	-2	-1	-2	-2	**44**	5	-3	-2	-2	-1	-1	-1	**77**	6	-3	-1	-2	-2	-3	-2
12	5	-3	-1	-1	-2	-2	-2	**45**	5	-3	-2	-1	-2	-1	-1	**78**	6	-3	-1	-2	-2	-2	-3
13	6	-3	-3	-2	-2	-2	-2	**46**	5	-3	-2	-1	-1	-2	-1	**79**	7	-3	-3	-3	-2	-2	-2
14	6	-3	-2	-3	-2	-2	-2	**47**	5	-3	-2	-1	-1	-1	-2	**80**	7	-3	-3	-2	-3	-2	-2
15	6	-3	-2	-2	-3	-2	-2	**48**	5	-3	-1	-2	-2	-1	-1	**81**	7	-3	-3	-2	-2	-3	-2
16	6	-3	-2	-2	-2	-3	-2	**49**	5	-3	-1	-2	-1	-2	-1	**82**	7	-3	-3	-2	-2	-2	-3
17	6	-3	-2	-2	-2	-2	-3	**50**	5	-3	-1	-2	-1	-1	-2	**83**	7	-3	-2	-3	-3	-2	-2
18	3	-2	-1	-1	-1	-1	0	**51**	5	-3	-1	-1	-2	-2	-1	**84**	7	-3	-2	-3	-2	-3	-2
19	3	-2	-1	-1	-1	0	-1	**52**	5	-3	-1	-1	-2	-1	-2	**85**	7	-3	-2	-3	-2	-2	-3
20	3	-2	-1	-1	0	-1	-1	**53**	5	-3	-1	-1	-1	-2	-2	**86**	7	-3	-2	-2	-3	-3	-2
21	3	-2	-1	0	-1	-1	-1	**54**	6	-3	-2	-2	-2	-2	-1	**87**	7	-3	-2	-2	-3	-2	-3
22	3	-2	0	-1	-1	-1	-1	**55**	6	-3	-2	-2	-2	-1	-2	**88**	7	-3	-2	-2	-2	-3	-3
23	4	-2	-2	-1	-1	-1	-1	**56**	6	-3	-2	-2	-1	-2	-2	**89**	7	-3	-3	-3	-3	-2	-2
24	4	-2	-1	-2	-1	-1	-1	**57**	6	-3	-2	-1	-2	-2	-2	**90**	7	-3	-3	-3	-2	-3	-2
25	4	-2	-1	-1	-2	-1	-1	**58**	6	-3	-1	-2	-2	-2	-2	**91**	7	-3	-3	-3	-2	-2	-3
26	4	-2	-1	-1	-1	-2	-1	**59**	6	-3	-3	-2	-2	-2	-1	**92**	7	-3	-3	-2	-3	-3	-2
27	4	-2	-1	-1	-1	-1	-2	**60**	6	-3	-3	-2	-2	-1	-2	**93**	7	-3	-3	-2	-3	-2	-3
28	4	-2	-2	-2	-1	-1	-1	**61**	6	-3	-3	-2	-1	-2	-2	**94**	7	-3	-3	-2	-2	-3	-3
29	4	-2	-2	-1	-2	-1	-1	**62**	6	-3	-3	-1	-2	-2	-2	**95**	7	-3	-2	-3	-3	-3	-2
30	4	-2	-2	-1	-1	-2	-1	**63**	6	-3	-2	-3	-2	-2	-1	**96**	7	-3	-2	-3	-3	-2	-3
31	4	-2	-2	-1	-1	-1	-2	**64**	6	-3	-2	-3	-2	-1	-2	**97**	7	-3	-2	-3	-2	-3	-3
32	4	-2	-1	-2	-2	-1	-1	**65**	6	-3	-2	-3	-1	-2	-2	**98**	7	-3	-2	-2	-3	-3	-3
33	4	-2	-1	-2	-1	-2	-1	**66**	6	-3	-2	-2	-3	-2	-1	**99**	8	-3	-3	-3	-3	-3	-3

Table 5: Generators of the cone $\Gamma(L_{56})$

#	L	E_1	E_2	E_3	E_4	E_5	E_6
1	2	-1	-1	-1	-1	0	0
2	3	-2	-1	-1	-1	0	0
3	3	-1	-2	-1	-1	0	0
4	3	-1	-1	-2	-1	0	0
5	3	-1	-1	-1	-2	0	0
6	5	-3	-2	-2	-2	-1	-1
7	5	-2	-3	-2	-2	-1	-1
8	5	-2	-2	-3	-2	-1	-1
9	5	-2	-2	-2	-3	-1	-1
10	4	-2	-2	-2	-1	-1	0
11	4	-2	-2	-2	-1	0	-1
12	2	-1	-1	-1	0	0	0
13	4	-2	-2	-1	-2	-1	0
14	4	-2	-2	-1	-2	0	-1
15	2	-1	-1	0	-1	0	0
16	4	-2	-1	-2	-2	-1	0
17	4	-2	-1	-2	-2	0	-1
18	2	-1	0	-1	-1	0	0
19	4	-1	-2	-2	-2	-1	0
20	4	-1	-2	-2	-2	0	-1
21	2	0	-1	-1	-1	0	0
22	3	-1	-1	-1	-1	0	0
23	3	-1	-1	-1	-1	-1	0
24	3	-1	-1	-1	-1	0	-1
25	3	-2	-1	-1	-1	-1	0
26	3	-2	-1	-1	-1	0	-1
27	3	-1	-2	-1	-1	-1	0
28	3	-1	-2	-1	-1	0	-1
29	3	-1	-1	-2	-1	-1	0
30	3	-1	-1	-2	-1	0	-1
31	3	-1	-1	-1	-2	-1	0
32	3	-1	-1	-1	-2	0	-1
33	4	-2	-2	-1	-1	-1	0
34	4	-2	-2	-1	-1	0	-1
35	4	-2	-1	-2	-1	-1	0
36	4	-2	-1	-2	-1	0	-1
37	4	-2	-1	-1	-2	-1	0
38	4	-2	-1	-1	-2	0	-1
39	4	-1	-2	-2	-1	-1	0
40	4	-1	-2	-2	-1	0	-1
41	4	-1	-2	-1	-2	-1	0
42	4	-1	-2	-1	-2	0	-1
43	4	-1	-1	-2	-2	-1	0
44	4	-1	-1	-2	-2	0	-1
45	4	-2	-2	-1	-1	-1	-1
46	4	-2	-1	-2	-1	-1	-1
47	4	-2	-1	-1	-2	-1	-1
48	4	-1	-2	-2	-1	-1	-1
49	4	-1	-2	-1	-2	-1	-1
50	4	-1	-1	-2	-2	-1	-1
51	5	-2	-2	-2	-1	-1	-1
52	5	-2	-2	-1	-2	-1	-1
53	5	-2	-1	-2	-2	-1	-1
54	5	-1	-2	-2	-2	-1	-1
55	4	-2	-2	-2	-1	-1	-1
56	4	-2	-2	-1	-2	-1	-1
57	4	-2	-1	-2	-2	-1	-1
58	4	-1	-2	-2	-2	-1	-1
59	5	-2	-2	-2	-2	-2	0
60	5	-2	-2	-2	-2	0	-2
61	5	-2	-2	-2	-2	-2	-1
62	5	-2	-2	-2	-2	-1	-2
63	5	-3	-2	-2	-1	-1	-1
64	5	-3	-2	-1	-2	-1	-1
65	5	-3	-1	-2	-2	-1	-1
66	5	-2	-3	-2	-1	-1	-1
67	5	-2	-3	-1	-2	-1	-1
68	5	-2	-2	-3	-1	-1	-1
69	5	-2	-2	-1	-3	-1	-1
70	5	-2	-1	-3	-2	-1	-1
71	5	-2	-1	-2	-3	-1	-1
72	5	-1	-3	-2	-2	-1	-1
73	5	-1	-2	-3	-2	-1	-1
74	5	-1	-2	-2	-3	-1	-1
75	6	-3	-2	-2	-2	-2	-1
76	6	-3	-2	-2	-2	-1	-2
77	6	-2	-3	-2	-2	-2	-1
78	6	-2	-3	-2	-2	-1	-2
79	6	-2	-2	-3	-2	-2	-1
80	6	-2	-2	-3	-2	-1	-2
81	6	-2	-2	-2	-3	-2	-1
82	6	-2	-2	-2	-3	-1	-2
83	6	-3	-3	-2	-2	-2	-1
84	6	-3	-3	-2	-2	-1	-2
85	6	-3	-2	-3	-2	-2	-1
86	6	-3	-2	-3	-2	-1	-2
87	6	-3	-2	-2	-3	-2	-1
88	6	-3	-2	-2	-3	-1	-2
89	6	-2	-3	-3	-2	-2	-1
90	6	-2	-3	-3	-2	-1	-2
91	6	-2	-3	-2	-3	-2	-1
92	6	-2	-3	-2	-3	-1	-2
93	6	-2	-2	-3	-3	-2	-1
94	6	-2	-2	-3	-3	-1	-2
95	7	-3	-3	-3	-2	-2	-2
96	7	-3	-3	-2	-3	-2	-2
97	7	-3	-2	-3	-3	-2	-2
98	7	-2	-3	-3	-3	-2	-2
99	7	-3	-3	-3	-3	-2	-2

References

[1] McKinnon, D. and Roth, M., *An analogue of Liouville's theorem and an application to cubic surfaces.* Submitted.