

**THE TABLE OF ELLIPTIC FIBRATIONS ON
($\tau, \bar{\tau}$)-GENERIC ENRIQUES SURFACES**

SIMON BRANDHORST AND ICHIRO SHIMADA

ABSTRACT. We present the table of elliptic fibrations for all $(\tau, \bar{\tau})$ -generic Enriques surfaces.

In our paper [1], we presented the table of elliptic fibrations of $(\tau, \bar{\tau})$ -generic Enriques surfaces with rank $\tau \leq 7$. In this note, we present the full table including the cases where rank $\tau \geq 8$.

<p>No. 1: (A_1, A_1)</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 10%;">none</td><td style="width: 10%;">none</td><td style="width: 10%;">136</td></tr> <tr><td>A_1</td><td>none</td><td>255</td></tr> </table> <p>No. 2: $(2A_1, 2A_1)$</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 10%;">none</td><td style="width: 10%;">none</td><td style="width: 10%;">36</td></tr> <tr><td>none</td><td>A_1</td><td>1</td></tr> <tr><td>A_1</td><td>none</td><td>128</td></tr> <tr><td>$2A_1$</td><td>none</td><td>126</td></tr> </table> <p>No. 3: (A_2, A_2)</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 10%;">A_1</td><td style="width: 10%;">none</td><td style="width: 10%;">136</td></tr> <tr><td>A_2</td><td>none</td><td>119</td></tr> </table> <p>No. 4: $(3A_1, 3A_1)$</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 10%;">none</td><td style="width: 10%;">none</td><td style="width: 10%;">10</td></tr> <tr><td>A_1</td><td>none</td><td>48</td></tr> <tr><td>A_1</td><td>A_1</td><td>3</td></tr> <tr><td>$2A_1$</td><td>none</td><td>96</td></tr> <tr><td>$3A_1$</td><td>none</td><td>60</td></tr> </table> <p>No. 5: $(A_2 + A_1, A_2 + A_1)$</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 10%;">none</td><td style="width: 10%;">A_1</td><td style="width: 10%;">1</td></tr> <tr><td>A_1</td><td>none</td><td>36</td></tr> <tr><td>$A_2 + A_1$</td><td>none</td><td>63</td></tr> <tr><td>$2A_1$</td><td>none</td><td>63</td></tr> <tr><td>A_2</td><td>none</td><td>28</td></tr> </table>	none	none	136	A_1	none	255	none	none	36	none	A_1	1	A_1	none	128	$2A_1$	none	126	A_1	none	136	A_2	none	119	none	none	10	A_1	none	48	A_1	A_1	3	$2A_1$	none	96	$3A_1$	none	60	none	A_1	1	A_1	none	36	$A_2 + A_1$	none	63	$2A_1$	none	63	A_2	none	28	<p>No. 6: (A_3, A_3)</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 10%;">none</td><td style="width: 10%;">A_2</td><td style="width: 10%;">1</td></tr> <tr><td>$2A_1$</td><td>none</td><td>36</td></tr> <tr><td>A_2</td><td>none</td><td>64</td></tr> <tr><td>A_3</td><td>none</td><td>54</td></tr> </table> <p>No. 7: $(4A_1, 4A_1)$</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 10%;">none</td><td style="width: 10%;">none</td><td style="width: 10%;">3</td></tr> <tr><td>A_1</td><td>none</td><td>16</td></tr> <tr><td>$2A_1$</td><td>none</td><td>48</td></tr> <tr><td>$2A_1$</td><td>A_1</td><td>6</td></tr> <tr><td>$3A_1$</td><td>none</td><td>64</td></tr> <tr><td>$4A_1$</td><td>none</td><td>25</td></tr> </table> <p>No. 8: $(4A_1, D_4)$</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 10%;">none</td><td style="width: 10%;">none</td><td style="width: 10%;">10</td></tr> <tr><td>none</td><td>$2A_1$</td><td>3</td></tr> <tr><td>$2A_1$</td><td>none</td><td>96</td></tr> <tr><td>$4A_1$</td><td>none</td><td>60</td></tr> </table>	none	A_2	1	$2A_1$	none	36	A_2	none	64	A_3	none	54	none	none	3	A_1	none	16	$2A_1$	none	48	$2A_1$	A_1	6	$3A_1$	none	64	$4A_1$	none	25	none	none	10	none	$2A_1$	3	$2A_1$	none	96	$4A_1$	none	60
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The first author gratefully acknowledges financial support by SFB TRR 195. The second author gratefully acknowledges financial support by JSPS KAKENHI Grant Number 16H03926 and 20H01798.

No. 9: $(A_2 + 2A_1, A_2 + 2A_1)$

A_1	none	10
A_1	A_1	2
$A_2 + A_1$	none	32
$2A_1$	none	32
$A_2 + 2A_1$	none	30
$3A_1$	none	30
A_2	none	6
A_2	A_1	1

No. 10: $(A_3 + A_1, A_3 + A_1)$

A_1	A_1	1
A_1	A_2	1
$A_2 + A_1$	none	32
$A_3 + A_1$	none	30
$2A_1$	none	10
$3A_1$	none	15
A_2	none	16
A_3	none	12

No. 11: $(2A_2, 2A_2)$

none	A_1	1
$A_2 + A_1$	none	56
$2A_1$	none	35
$2A_2$	none	35

No. 12: (A_4, A_4)

none	A_2	1
$A_2 + A_1$	none	36
A_3	none	27
A_4	none	27

No. 13: (D_4, D_4)

none	A_3	3
$4A_1$	none	10
A_3	none	48
D_4	none	20

No. 14: $(5A_1, 5A_1)$

none	none	1
A_1	none	5
$2A_1$	none	20
$3A_1$	none	40
$3A_1$	A_1	10
$4A_1$	none	40
$5A_1$	none	5

No. 15: $(5A_1, D_4 + A_1)$

none	none	3
A_1	none	4
A_1	$2A_1$	3
$2A_1$	none	24
$3A_1$	none	48
$3A_1$	A_1	4
$4A_1$	none	16
$5A_1$	none	24

No. 16: $(A_2 + 3A_1, A_2 + 3A_1)$

A_1	none	3
$A_2 + A_1$	none	12
$A_2 + A_1$	A_1	3
$2A_1$	none	12
$2A_1$	A_1	3
$A_2 + 2A_1$	none	24
$3A_1$	none	24
$A_2 + 3A_1$	none	12
$4A_1$	none	13
A_2	none	1

No. 17: $(A_3 + 2A_1, A_3 + 2A_1)$

$A_2 + A_1$	none	16
$A_3 + A_1$	none	16
$2A_1$	none	3
$2A_1$	A_1	2
$2A_1$	A_2	1
$A_2 + 2A_1$	none	16
$A_3 + 2A_1$	none	13
$3A_1$	none	8
$4A_1$	none	6
A_2	none	4
A_3	none	2
A_3	A_1	1

No. 18: $(A_3 + 2A_1, D_5)$

none	$A_2 + A_1$	1
none	$2A_1$	1
$A_2 + A_1$	none	32
$2A_1$	none	10
$A_3 + 2A_1$	none	30
$4A_1$	none	15
A_3	none	6

No. 19: $(2A_2 + A_1, 2A_2 + A_1)$

A_1	A_1	1
$A_2 + A_1$	none	12
$2A_2 + A_1$	none	15
$2A_1$	none	10
$A_2 + 2A_1$	none	30
$3A_1$	none	15
A_2	A_1	2
$2A_2$	none	10

No. 20: $(A_4 + A_1, A_4 + A_1)$

A_1	A_2	1
$A_2 + A_1$	none	10
$A_3 + A_1$	none	15
$A_4 + A_1$	none	15
$A_2 + 2A_1$	none	15
A_2	A_1	1
A_3	none	6
A_4	none	6

No. 21: $(D_4 + A_1, D_4 + A_1)$

A_1	A_3	3
$A_3 + A_1$	none	24
$D_4 + A_1$	none	12
$3A_1$	A_1	1
$4A_1$	none	3
$5A_1$	none	3
A_3	none	12
D_4	none	4

No. 22: $(A_3 + A_2, A_3 + A_2)$

A_1	A_1	1
$A_2 + A_1$	none	16
$A_3 + A_1$	none	12
$A_2 + 2A_1$	none	6
$3A_1$	none	9
A_2	A_2	1
$A_3 + A_2$	none	18
$2A_2$	none	16

No. 23: (A_5, A_5)

A_1	A_2	1
$A_3 + A_1$	none	15
$2A_2$	none	10
A_4	none	12
A_5	none	15

No. 24: (D_5, D_5)

none	A_3	1
none	A_4	1
$A_3 + 2A_1$	none	10
A_4	none	16
D_4	none	5
D_5	none	10

No. 25: $(6A_1, D_4 + 2A_1)$

none	none	1
A_1	none	2
$2A_1$	none	8
$2A_1$	$2A_1$	3
$3A_1$	none	24
$4A_1$	none	28
$4A_1$	A_1	9
$5A_1$	none	16
$6A_1$	none	3

No. 27: $(A_2 + 4A_1, A_2 + 4A_1)$

A_1	none	1
$A_2 + A_1$	none	4
$2A_1$	none	4
$A_2 + 2A_1$	none	12
$A_2 + 2A_1$	A_1	6
$3A_1$	none	12
$3A_1$	A_1	4
$A_2 + 3A_1$	none	16
$4A_1$	none	16
$A_2 + 4A_1$	none	1
$5A_1$	none	4

No. 28: $(A_2 + 4A_1, D_4 + A_2)$

A_1	none	3
$A_2 + 2A_1$	none	24
$3A_1$	none	24
$3A_1$	A_1	4
$A_2 + 4A_1$	none	12
$5A_1$	none	12
A_2	none	1
A_2	$2A_1$	3

No. 29: $(A_3 + 3A_1, A_3 + 3A_1)$

$A_2 + A_1$	none	6
$A_3 + A_1$	none	6
$A_3 + A_1$	A_1	3
$2A_1$	none	1
$A_2 + 2A_1$	none	12
$A_3 + 2A_1$	none	12
$3A_1$	none	3
$3A_1$	A_1	3
$3A_1$	A_2	1
$A_2 + 3A_1$	none	8
$A_3 + 3A_1$	none	3
$4A_1$	none	6
$5A_1$	none	1
A_2	none	1

No. 30: $(A_3 + 3A_1, D_5 + A_1)$

A_1	$A_2 + A_1$	1
A_1	$2A_1$	1
$A_2 + A_1$	none	8
$A_3 + A_1$	none	4
$A_3 + A_1$	A_1	2
$2A_1$	none	3
$A_2 + 2A_1$	none	16
$A_3 + 2A_1$	none	8
$3A_1$	none	4
$3A_1$	A_1	1
$A_3 + 3A_1$	none	12
$4A_1$	none	4
$5A_1$	none	6
A_3	none	1

No. 31: $(2A_2 + 2A_1, 2A_2 + 2A_1)$

$A_2 + A_1$	none	2
$A_2 + A_1$	A_1	4
$2A_2 + A_1$	none	8
$2A_1$	none	3
$2A_1$	A_1	1
$A_2 + 2A_1$	none	16
$2A_2 + 2A_1$	none	6
$3A_1$	none	8
$A_2 + 3A_1$	none	12
$4A_1$	none	7
$2A_2$	none	3
$2A_2$	A_1	1

No. 32: $(A_4 + 2A_1, A_4 + 2A_1)$

$A_2 + A_1$	none	3
$A_2 + A_1$	A_1	2
$A_3 + A_1$	none	8
$A_4 + A_1$	none	8
$2A_1$	A_2	1
$A_2 + 2A_1$	none	8
$A_3 + 2A_1$	none	7
$A_4 + 2A_1$	none	6
$A_2 + 3A_1$	none	6
A_3	none	1
A_4	none	1
A_4	A_1	1

No. 33: $(D_4 + 2A_1, D_4 + 2A_1)$

$A_3 + A_1$	none	12
$D_4 + A_1$	none	8
$2A_1$	A_3	3
$A_3 + 2A_1$	none	12
$D_4 + 2A_1$	none	3
$4A_1$	none	1
$4A_1$	A_1	2
$5A_1$	none	2
A_3	none	3
D_4	A_1	1

No. 34: $(D_4 + 2A_1, D_6)$

none	$A_3 + A_1$	1
$A_3 + A_1$	none	16
$2A_1$	$2A_1$	1
$2A_1$	A_3	2
$A_3 + 2A_1$	none	8
$D_4 + 2A_1$	none	12
$4A_1$	none	3
$6A_1$	none	3
A_3	none	4
D_4	none	2

No. 35:

 $(A_3 + A_2 + A_1, A_3 + A_2 + A_1)$

$A_2 + A_1$	none	4
$A_2 + A_1$	A_1	1
$A_2 + A_1$	A_2	1
$A_3 + A_2 + A_1$	none	6
$2A_2 + A_1$	none	8
$A_3 + A_1$	none	2
$2A_1$	A_1	1
$A_2 + 2A_1$	none	9
$A_3 + 2A_1$	none	7
$3A_1$	none	3
$A_2 + 3A_1$	none	3
$4A_1$	none	3
$A_3 + A_2$	none	6
$2A_2$	none	4
A_3	A_1	1

No. 36: $(A_5 + A_1, A_5 + A_1)$

$2A_2 + A_1$	none	4
$A_3 + A_1$	none	4
$A_4 + A_1$	none	8
$A_5 + A_1$	none	7
$2A_1$	A_2	1
$A_3 + 2A_1$	none	6
$2A_2$	none	3
A_3	A_1	1
A_4	none	2
A_5	none	4

No. 37: $(A_5 + A_1, E_6)$

none	$A_2 + A_1$	1
$A_5 + A_1$	none	15
$A_3 + 2A_1$	none	15
$2A_2$	none	10
A_4	none	6

No. 38: $(D_5 + A_1, D_5 + A_1)$

A_1	A_3	1
A_1	A_4	1
$A_3 + A_1$	A_1	1
$A_4 + A_1$	none	8
$D_4 + A_1$	none	3
$D_5 + A_1$	none	6
$A_3 + 2A_1$	none	3
$A_3 + 3A_1$	none	3
A_4	none	4
D_4	none	1
D_5	none	2

No. 39: $(3A_2, 3A_2)$

$2A_2 + A_1$	none	30
$A_2 + 2A_1$	none	15
$3A_1$	none	10
A_2	A_1	3
$3A_2$	none	5

No. 40: $(3A_2, E_6)$

$2A_2 + A_1$	none	30
$A_2 + 2A_1$	none	15
$3A_1$	none	10
A_2	A_1	3
$3A_2$	none	5

No. 41: $(A_4 + A_2, A_4 + A_2)$

$2A_2 + A_1$	none	6
$A_3 + A_1$	none	6
$A_4 + A_1$	none	6
$A_2 + 2A_1$	none	9
A_2	A_1	1
A_2	A_2	1
$A_3 + A_2$	none	9
$A_4 + A_2$	none	9

No. 42: $(D_4 + A_2, D_4 + A_2)$

$A_3 + A_1$	none	12
$D_4 + A_1$	none	4
$3A_1$	A_1	1
$A_2 + 4A_1$	none	1
$5A_1$	none	2
A_2	A_3	3
$A_3 + A_2$	none	12
$D_4 + A_2$	none	8

No. 43: $(2A_3, 2A_3)$

$2A_1$	A_1	1
$A_2 + 2A_1$	none	8
$A_3 + 2A_1$	none	4
$4A_1$	none	2
$A_3 + A_2$	none	16
$2A_2$	none	8
A_3	A_2	2
$2A_3$	none	9

No. 44: $(2A_3, D_6)$

none	$2A_1$	1
none	$2A_2$	1
$A_3 + 2A_1$	none	12
$4A_1$	none	9
$2A_2$	none	16
$2A_3$	none	18

No. 45: (A_6, A_6)

$A_4 + A_1$	none	6
A_2	A_2	1
$A_3 + A_2$	none	9
A_5	none	6
A_6	none	9

No. 46: (D_6, D_6)

none	A_5	1
$2A_1$	A_3	1
$D_4 + 2A_1$	none	3
$2A_3$	none	3
A_5	none	8
D_5	none	2
D_6	none	6

No. 47: (E_6, E_6)

none	A_4	1
$A_5 + A_1$	none	10
D_5	none	5
E_6	none	5

No. 50:

 $(A_2 + 5A_1, D_4 + A_2 + A_1)$

A_1	none	1
$A_2 + A_1$	none	1
$A_2 + A_1$	$2A_1$	3
$2A_1$	none	1
$A_2 + 2A_1$	none	6
$3A_1$	none	6
$A_2 + 3A_1$	none	12
$A_2 + 3A_1$	A_1	4
$4A_1$	none	12
$4A_1$	A_1	5
$A_2 + 4A_1$	none	4
$5A_1$	none	4
$6A_1$	none	3

No. 51: $(A_3 + 4A_1, D_5 + 2A_1)$

$A_2 + A_1$	none	2
$A_3 + A_1$	none	2
$2A_1$	none	1
$2A_1$	$A_2 + A_1$	1
$2A_1$	$2A_1$	1
$A_2 + 2A_1$	none	8
$A_3 + 2A_1$	none	4
$A_3 + 2A_1$	A_1	5
$3A_1$	none	2
$A_2 + 3A_1$	none	8
$A_3 + 3A_1$	none	8
$4A_1$	none	3
$4A_1$	A_1	2
$A_3 + 4A_1$	none	1
$5A_1$	none	4
$6A_1$	none	1

No. 52: $(A_3 + 4A_1, D_4 + A_3)$

$2A_1$	none	1
$A_2 + 2A_1$	none	12
$A_3 + 2A_1$	none	12
$4A_1$	none	6
$4A_1$	A_1	4
$4A_1$	A_2	1
$A_2 + 4A_1$	none	8
$A_3 + 4A_1$	none	3
A_2	none	1
A_3	$2A_1$	3

No. 54: $(2A_2 + 3A_1, 2A_2 + 3A_1)$

$2A_2 + A_1$	none	3
$2A_2 + A_1$	A_1	3
$2A_1$	none	1
$A_2 + 2A_1$	none	6
$A_2 + 2A_1$	A_1	6
$2A_2 + 2A_1$	none	6
$3A_1$	none	3
$3A_1$	A_1	1
$A_2 + 3A_1$	none	12
$4A_1$	none	6
$A_2 + 4A_1$	none	2
$5A_1$	none	3
$2A_2$	none	1

No. 55: $(A_4 + 3A_1, A_4 + 3A_1)$

$A_2 + A_1$	none	1
$A_3 + A_1$	none	3
$A_4 + A_1$	none	3
$A_4 + A_1$	A_1	3
$A_2 + 2A_1$	none	3
$A_2 + 2A_1$	A_1	3
$A_3 + 2A_1$	none	6
$A_4 + 2A_1$	none	6
$3A_1$	A_2	1
$A_2 + 3A_1$	none	6
$A_3 + 3A_1$	none	3
$A_2 + 4A_1$	none	1

No. 56: $(D_4 + 3A_1, D_6 + A_1)$

A_1	$A_3 + A_1$	1
$A_3 + A_1$	none	6
$D_4 + A_1$	none	2
$D_4 + A_1$	A_1	2
$A_3 + 2A_1$	none	10
$D_4 + 2A_1$	none	4
$3A_1$	$2A_1$	1
$3A_1$	A_3	2
$A_3 + 3A_1$	none	4
$D_4 + 3A_1$	none	2
$4A_1$	none	1
$5A_1$	none	1
$5A_1$	A_1	1
$6A_1$	none	1
A_3	none	1

No. 58:

$(A_3 + A_2 + 2A_1, A_3 + A_2 + 2A_1)$

$A_2 + A_1$	none	1
$A_3 + A_2 + A_1$	none	4
$2A_2 + A_1$	none	4
$A_3 + A_1$	A_1	2
$A_2 + 2A_1$	none	4
$A_2 + 2A_1$	A_1	2
$A_2 + 2A_1$	A_2	1
$A_3 + A_2 + 2A_1$	none	1
$2A_2 + 2A_1$	none	4
$A_3 + 2A_1$	none	4
$3A_1$	none	1
$3A_1$	A_1	1
$A_2 + 3A_1$	none	6
$A_3 + 3A_1$	none	2
$4A_1$	none	2
$5A_1$	none	1
$A_3 + A_2$	none	2
$A_3 + A_2$	A_1	1
$2A_2$	none	1

No. 59:

$(A_3 + A_2 + 2A_1, D_5 + A_2)$

$2A_2 + A_1$	none	8
$A_3 + A_1$	none	1
$A_3 + A_1$	A_1	2
$A_2 + 2A_1$	none	9
$A_3 + A_2 + 2A_1$	none	6
$3A_1$	none	3
$3A_1$	A_1	1
$A_3 + 3A_1$	none	6
$A_2 + 4A_1$	none	3
$5A_1$	none	3
A_2	$A_2 + A_1$	1
A_2	$2A_1$	1
$A_3 + A_2$	none	3

No. 60: $(A_5 + 2A_1, A_5 + 2A_1)$

$2A_2 + A_1$	none	2
$A_3 + A_1$	none	1
$A_3 + A_1$	A_1	2
$A_4 + A_1$	none	4
$A_5 + A_1$	none	4
$2A_2 + 2A_1$	none	2
$A_3 + 2A_1$	none	4
$A_4 + 2A_1$	none	4
$A_5 + 2A_1$	none	2
$3A_1$	A_2	1
$A_3 + 3A_1$	none	1
$2A_2$	none	1
A_5	none	1
A_5	A_1	1

No. 61: $(A_5 + 2A_1, E_6 + A_1)$

A_1	$A_2 + A_1$	1
$2A_2 + A_1$	none	4
$A_3 + A_1$	A_1	1
$A_4 + A_1$	none	4
$A_5 + A_1$	none	4
$A_3 + 2A_1$	none	4
$A_5 + 2A_1$	none	6
$A_3 + 3A_1$	none	6
$2A_2$	none	3
A_4	none	1
A_5	A_1	1

No. 62: $(D_5 + 2A_1, D_5 + 2A_1)$

$A_4 + A_1$	none	4
$D_4 + A_1$	none	2
$D_5 + A_1$	none	4
$2A_1$	A_3	1
$2A_1$	A_4	1
$A_3 + 2A_1$	none	1
$A_3 + 2A_1$	A_1	2
$A_4 + 2A_1$	none	4
$D_4 + 2A_1$	none	1
$D_5 + 2A_1$	none	1
$A_3 + 3A_1$	none	2
A_4	none	1
D_5	A_1	1

No. 63: $(D_5 + 2A_1, D_7)$

none	$A_4 + A_1$	1
$A_4 + A_1$	none	8
$2A_1$	A_3	1
$A_3 + 2A_1$	none	3
$D_4 + 2A_1$	none	3
$D_5 + 2A_1$	none	6
$A_3 + 4A_1$	none	3
A_3	$2A_1$	1
D_4	none	1
D_5	none	1

No. 64: $(3A_2 + A_1, 3A_2 + A_1)$

$A_2 + A_1$	A_1	3
$2A_2 + A_1$	none	9
$3A_2 + A_1$	none	3
$A_2 + 2A_1$	none	3
$2A_2 + 2A_1$	none	9
$3A_1$	none	3
$A_2 + 3A_1$	none	9
$4A_1$	none	4
$2A_2$	A_1	3
$3A_2$	none	1

No. 65: $(3A_2 + A_1, E_6 + A_1)$

$A_2 + A_1$	A_1	3
$2A_2 + A_1$	none	9
$3A_2 + A_1$	none	3
$A_2 + 2A_1$	none	3
$2A_2 + 2A_1$	none	9
$3A_1$	none	3
$A_2 + 3A_1$	none	9
$4A_1$	none	4
$2A_2$	A_1	3
$3A_2$	none	1

No. 66:

 $(A_4 + A_2 + A_1, A_4 + A_2 + A_1)$

$A_2 + A_1$	A_1	1
$A_2 + A_1$	A_2	1
$A_3 + A_2 + A_1$	none	3
$A_4 + A_2 + A_1$	none	3
$2A_2 + A_1$	none	1
$A_3 + A_1$	none	1
$A_4 + A_1$	none	1
$A_2 + 2A_1$	none	3
$2A_2 + 2A_1$	none	3
$A_3 + 2A_1$	none	4
$A_4 + 2A_1$	none	3
$A_2 + 3A_1$	none	3
$A_3 + A_2$	none	3
$A_4 + A_2$	none	3
$2A_2$	A_1	1
A_4	A_1	1

No. 67:

 $(D_4 + A_2 + A_1, D_4 + A_2 + A_1)$

$A_2 + A_1$	A_3	3
$A_3 + A_2 + A_1$	none	6
$A_3 + A_1$	none	3
$A_3 + 2A_1$	none	6
$D_4 + 2A_1$	none	3
$A_2 + 3A_1$	A_1	1
$4A_1$	A_1	1
$5A_1$	none	1
$A_3 + A_2$	none	3
$D_4 + A_2$	none	4
D_4	A_1	1

No. 68: $(2A_3 + A_1, 2A_3 + A_1)$

$A_3 + A_2 + A_1$	none	8
$2A_2 + A_1$	none	4
$A_3 + A_1$	A_1	2
$A_3 + A_1$	A_2	2
$2A_3 + A_1$	none	1
$A_2 + 2A_1$	none	2
$3A_1$	A_1	1
$A_2 + 3A_1$	none	4
$A_3 + 3A_1$	none	2
$4A_1$	none	1
$A_3 + A_2$	none	4
$2A_2$	none	2
$2A_3$	none	4

No. 69: $(2A_3 + A_1, D_6 + A_1)$

A_1	$2A_1$	1
A_1	$2A_2$	1
$2A_2 + A_1$	none	8
$A_3 + A_1$	A_1	2
$2A_3 + A_1$	none	6
$A_3 + 2A_1$	none	2
$A_3 + 3A_1$	none	6
$4A_1$	none	3
$5A_1$	none	3
$2A_2$	none	4
$2A_3$	none	6

No. 70: $(2A_3 + A_1, E_7)$

A_1	$2A_1$	1
A_1	$2A_2$	1
$2A_2 + A_1$	none	8
$A_3 + A_1$	A_1	2
$2A_3 + A_1$	none	6
$A_3 + 2A_1$	none	2
$A_3 + 3A_1$	none	6
$4A_1$	none	3
$5A_1$	none	3
$2A_2$	none	4
$2A_3$	none	6

No. 71: $(A_6 + A_1, A_6 + A_1)$

$A_2 + A_1$	A_2	1
$A_3 + A_2 + A_1$	none	3
$A_4 + A_1$	none	1
$A_5 + A_1$	none	4
$A_6 + A_1$	none	3
$A_4 + 2A_1$	none	3
$A_3 + A_2$	none	3
A_4	A_1	1
A_5	none	1
A_6	none	3

No. 72: $(D_6 + A_1, D_6 + A_1)$

A_1	A_5	1
$2A_3 + A_1$	none	1
$A_5 + A_1$	none	4
$D_4 + A_1$	A_1	1
$D_5 + A_1$	none	2
$D_6 + A_1$	none	2
$D_4 + 2A_1$	none	1
$3A_1$	A_3	1
$2A_3$	none	1
A_5	none	2
D_6	none	2

No. 73: $(D_6 + A_1, E_7)$

A_1	$A_3 + A_1$	1
A_1	A_5	1
$A_5 + A_1$	none	4
$D_6 + A_1$	none	6
$D_4 + 3A_1$	none	3
$2A_3$	none	3
A_5	none	4
D_5	none	1

No. 74: $(E_6 + A_1, E_6 + A_1)$

A_1	A_4	1
$A_5 + A_1$	none	3
$D_5 + A_1$	none	3
$E_6 + A_1$	none	3
$A_5 + 2A_1$	none	3
A_5	A_1	1
D_5	none	1
E_6	none	1

No. 75: $(A_3 + 2A_2, A_3 + 2A_2)$

$A_2 + A_1$	A_1	2
$A_3 + A_2 + A_1$	none	12
$2A_2 + A_1$	none	8
$A_2 + 2A_1$	none	4
$2A_2 + 2A_1$	none	3
$A_3 + 2A_1$	none	1
$4A_1$	none	3
$2A_2$	A_2	1
$3A_2$	none	4
A_3	A_1	1

No. 76: $(A_5 + A_2, A_5 + A_2)$

$A_2 + A_1$	A_2	1
$A_3 + A_2 + A_1$	none	3
$2A_2 + A_1$	none	3
$A_4 + A_1$	none	2
$A_5 + A_1$	none	4
$A_3 + 2A_1$	none	3
$A_4 + A_2$	none	6
$A_5 + A_2$	none	3
$3A_2$	none	1
A_3	A_1	1

No. 77: $(A_5 + A_2, E_7)$

$A_2 + A_1$	A_2	1
$A_3 + A_2 + A_1$	none	3
$2A_2 + A_1$	none	3
$A_4 + A_1$	none	2
$A_5 + A_1$	none	4
$A_3 + 2A_1$	none	3
$A_4 + A_2$	none	6
$A_5 + A_2$	none	3
$3A_2$	none	1
A_3	A_1	1

No. 78: $(D_5 + A_2, D_5 + A_2)$

$A_3 + A_1$	A_1	1
$A_4 + A_1$	none	4
$D_4 + A_1$	none	1
$D_5 + A_1$	none	2
$A_3 + A_2 + 2A_1$	none	1
$A_3 + 3A_1$	none	2
A_2	A_3	1
A_2	A_4	1
$A_4 + A_2$	none	4
$D_4 + A_2$	none	2
$D_5 + A_2$	none	4

No. 79: $(A_4 + A_3, A_4 + A_3)$

$A_2 + A_1$	A_1	1
$A_3 + A_2 + A_1$	none	2
$2A_2 + A_1$	none	4
$A_3 + 2A_1$	none	1
$A_4 + 2A_1$	none	1
$A_2 + 3A_1$	none	2
$A_3 + A_2$	none	4
$A_4 + A_2$	none	4
A_3	A_2	1
$A_4 + A_3$	none	4
$2A_3$	none	5
A_4	A_2	1

No. 80: $(D_4 + A_3, D_4 + A_3)$

$A_3 + 2A_1$	none	3
$4A_1$	A_1	1
$A_2 + 4A_1$	none	1
$A_3 + A_2$	none	6
$D_4 + A_2$	none	4
A_3	A_3	3
$D_4 + A_3$	none	3
$2A_3$	none	6
D_4	A_2	1

No. 81: $(D_4 + A_3, D_7)$

none	$A_3 + A_2$	1
$2A_1$	$2A_1$	1
$A_3 + 2A_1$	none	4
$D_4 + 2A_1$	none	2
$A_3 + 4A_1$	none	1
$6A_1$	none	2
$A_3 + A_2$	none	8
A_3	A_3	2
$D_4 + A_3$	none	8
$2A_3$	none	4

No. 82: (A_7, A_7)

$A_5 + A_1$	none	2
$A_4 + A_2$	none	4
A_3	A_2	1
$2A_3$	none	2
A_6	none	4
A_7	none	5

No. 83: (A_7, E_7)

none	$2A_2$	1
$A_5 + A_1$	none	6
$2A_3$	none	9
A_7	none	9

No. 84: (D_7, D_7)

none	A_6	1
$D_5 + 2A_1$	none	1
A_3	A_3	1
$D_4 + A_3$	none	2
A_6	none	4
D_6	none	1
D_7	none	4

No. 85: (E_7, E_7)

A_1	A_5	1
$D_6 + A_1$	none	3
A_7	none	3
E_6	none	1
E_7	none	3

No. 91: $(A_4 + 4A_1, D_4 + A_4)$

$A_2 + A_1$	none	1
$A_3 + 2A_1$	none	6
$A_4 + 2A_1$	none	6
$A_2 + 3A_1$	none	6
$A_2 + 3A_1$	A_1	4
$4A_1$	A_2	1
$A_3 + 4A_1$	none	3
A_4	$2A_1$	3

No. 95:

 $(A_3 + A_2 + 3A_1, D_5 + A_2 + A_1)$

$A_2 + A_1$	$A_2 + A_1$	1
$A_2 + A_1$	$2A_1$	1
$A_3 + A_2 + A_1$	none	1
$A_3 + A_2 + A_1$	A_1	2
$2A_2 + A_1$	none	2
$A_2 + 2A_1$	none	2
$A_3 + A_2 + 2A_1$	none	2
$2A_2 + 2A_1$	none	4
$A_3 + 2A_1$	none	1
$A_3 + 2A_1$	A_1	3
$3A_1$	none	1
$A_2 + 3A_1$	none	5
$A_2 + 3A_1$	A_1	1
$A_3 + 3A_1$	none	2
$4A_1$	none	1
$4A_1$	A_1	1
$A_2 + 4A_1$	none	1
$A_3 + 4A_1$	none	1
$5A_1$	none	1
$6A_1$	none	1
$A_3 + A_2$	none	1

No. 96: $(A_5 + 3A_1, E_6 + 2A_1)$

$2A_2 + A_1$	none	2
$A_4 + A_1$	none	2
$A_5 + A_1$	none	1
$A_5 + A_1$	A_1	3
$2A_1$	$A_2 + A_1$	1
$2A_2 + 2A_1$	none	2
$A_3 + 2A_1$	none	1
$A_3 + 2A_1$	A_1	2
$A_4 + 2A_1$	none	2
$A_5 + 2A_1$	none	4
$A_3 + 3A_1$	none	4
$A_3 + 4A_1$	none	1
$2A_2$	none	1

No. 97: $(D_5 + 3A_1, D_7 + A_1)$

A_1	$A_4 + A_1$	1
$A_3 + A_1$	$2A_1$	1
$A_4 + A_1$	none	2
$D_4 + A_1$	none	1
$D_5 + A_1$	none	1
$D_5 + A_1$	A_1	2
$A_3 + 2A_1$	none	1
$A_4 + 2A_1$	none	4
$D_4 + 2A_1$	none	1
$D_5 + 2A_1$	none	2
$3A_1$	A_3	1
$A_3 + 3A_1$	none	1
$A_3 + 3A_1$	A_1	1
$D_4 + 3A_1$	none	1
$A_3 + 4A_1$	none	1

No. 98: $(3A_2 + 2A_1, E_6 + 2A_1)$

$2A_2 + A_1$	none	3
$2A_2 + A_1$	A_1	6
$3A_2 + A_1$	none	2
$A_2 + 2A_1$	A_1	3
$2A_2 + 2A_1$	none	6
$3A_1$	none	1
$A_2 + 3A_1$	none	6
$4A_1$	none	2
$A_2 + 4A_1$	none	3
$5A_1$	none	2
$3A_2$	A_1	1

No. 99:

$(A_4 + A_2 + 2A_1, A_4 + A_2 + 2A_1)$

$A_3 + A_2 + A_1$	none	2
$A_4 + A_2 + A_1$	none	2
$2A_2 + A_1$	A_1	2
$A_4 + A_1$	A_1	2
$A_2 + 2A_1$	none	1
$A_2 + 2A_1$	A_1	1
$A_2 + 2A_1$	A_2	1
$A_3 + A_2 + 2A_1$	none	1
$2A_2 + 2A_1$	none	2
$A_3 + 2A_1$	none	2
$A_4 + 2A_1$	none	2
$A_2 + 3A_1$	none	2
$A_3 + 3A_1$	none	2
$A_2 + 4A_1$	none	1
$A_3 + A_2$	none	1
$A_4 + A_2$	none	1
$A_4 + A_2$	A_1	1

No. 100:

$(D_4 + A_2 + 2A_1, D_6 + A_2)$

$A_3 + A_2 + A_1$	none	4
$A_3 + A_1$	none	1
$D_4 + A_1$	A_1	2
$A_2 + 2A_1$	$2A_1$	1
$A_2 + 2A_1$	A_3	2
$A_3 + A_2 + 2A_1$	none	2
$A_3 + 2A_1$	none	4
$A_3 + 3A_1$	none	2
$D_4 + 3A_1$	none	2
$5A_1$	none	1
$5A_1$	A_1	1
A_2	$A_3 + A_1$	1
$A_3 + A_2$	none	1
$D_4 + A_2$	none	2

No. 101: $(2A_3 + 2A_1, E_7 + A_1)$

$2A_2 + A_1$	none	4
$2A_3 + A_1$	none	4
$2A_1$	$2A_1$	1
$2A_1$	$2A_2$	1
$2A_2 + 2A_1$	none	4
$A_3 + 2A_1$	A_1	4
$2A_3 + 2A_1$	none	1
$A_3 + 3A_1$	none	4
$4A_1$	none	1
$5A_1$	none	2
$6A_1$	none	1
$2A_2$	none	1
$2A_3$	none	2
$2A_3$	A_1	1

No. 102: $(2A_3 + 2A_1, D_5 + A_3)$

$A_3 + A_2 + A_1$	none	4
$2A_2 + A_1$	none	4
$A_2 + 2A_1$	none	1
$A_3 + A_2 + 2A_1$	none	4
$A_3 + 2A_1$	A_1	2
$A_3 + 2A_1$	A_2	1
$2A_3 + 2A_1$	none	1
$A_2 + 3A_1$	none	2
$4A_1$	none	1
$4A_1$	A_1	1
$A_2 + 4A_1$	none	2
$A_3 + 4A_1$	none	1
$A_3 + A_2$	none	1
A_3	$A_2 + A_1$	1
A_3	$2A_1$	1
$2A_3$	none	2

No. 105: $(A_6 + 2A_1, A_6 + 2A_1)$

$A_3 + A_2 + A_1$	none	2
$A_4 + A_1$	A_1	2
$A_5 + A_1$	none	2
$A_6 + A_1$	none	2
$A_2 + 2A_1$	A_2	1
$A_3 + A_2 + 2A_1$	none	1
$A_4 + 2A_1$	none	2
$A_5 + 2A_1$	none	2
$A_3 + A_2$	none	1
A_6	none	1
A_6	A_1	1

No. 106: $(D_6 + 2A_1, E_7 + A_1)$

$2A_3 + A_1$	none	1
$A_5 + A_1$	none	3
$D_5 + A_1$	none	1
$D_6 + A_1$	none	2
$2A_1$	$A_3 + A_1$	1
$2A_1$	A_5	1
$A_5 + 2A_1$	none	2
$D_4 + 2A_1$	A_1	1
$D_6 + 2A_1$	none	1
$D_4 + 3A_1$	none	1
$2A_3$	none	1
A_5	none	1
D_6	A_1	1

No. 107: $(D_6 + 2A_1, D_8)$

none	$A_5 + A_1$	1
$A_5 + A_1$	none	4
$2A_3 + 2A_1$	none	1
$D_4 + 2A_1$	none	1
$D_5 + 2A_1$	none	2
$D_6 + 2A_1$	none	2
$4A_1$	A_3	1
$2A_3$	none	1
D_4	$2A_1$	1
D_6	none	1

No. 109: $(E_6 + 2A_1, E_6 + 2A_1)$

$A_5 + A_1$	none	1
$A_5 + A_1$	A_1	2
$D_5 + A_1$	none	2
$E_6 + A_1$	none	2
$2A_1$	A_4	1
$A_5 + 2A_1$	none	2
$D_5 + 2A_1$	none	1
E_6	A_1	1

No. 110:

 $(A_3 + 2A_2 + A_1, A_3 + 2A_2 + A_1)$

$A_3 + A_2 + A_1$	none	4
$2A_2 + A_1$	none	2
$2A_2 + A_1$	A_1	1
$2A_2 + A_1$	A_2	1
$3A_2 + A_1$	none	2
$A_3 + A_1$	A_1	1
$A_2 + 2A_1$	none	1
$A_2 + 2A_1$	A_1	2
$A_3 + A_2 + 2A_1$	none	2
$2A_2 + 2A_1$	none	5
$A_2 + 3A_1$	none	2
$A_3 + 3A_1$	none	1
$4A_1$	none	1
$5A_1$	none	1
$A_3 + A_2$	A_1	2
$3A_2$	none	1

No. 111:

 $(A_5 + A_2 + A_1, A_5 + A_2 + A_1)$

$A_3 + A_2 + A_1$	none	1
$A_4 + A_2 + A_1$	none	2
$A_5 + A_2 + A_1$	none	1
$2A_2 + A_1$	none	1
$3A_2 + A_1$	none	1
$A_3 + A_1$	A_1	1
$A_5 + A_1$	none	1
$A_2 + 2A_1$	A_2	1
$2A_2 + 2A_1$	none	1
$A_3 + 2A_1$	none	1
$A_4 + 2A_1$	none	2
$A_5 + 2A_1$	none	1
$A_3 + 3A_1$	none	1
$A_3 + A_2$	A_1	1
$A_4 + A_2$	none	2
$A_5 + A_2$	none	1
A_5	A_1	1

No. 112:

$(A_5 + A_2 + A_1, E_7 + A_1)$

$A_3 + A_2 + A_1$	none	1
$A_4 + A_2 + A_1$	none	2
$A_5 + A_2 + A_1$	none	1
$2A_2 + A_1$	none	1
$3A_2 + A_1$	none	1
$A_3 + A_1$	A_1	1
$A_5 + A_1$	none	1
$A_2 + 2A_1$	A_2	1
$2A_2 + 2A_1$	none	1
$A_3 + 2A_1$	none	1
$A_4 + 2A_1$	none	2
$A_5 + 2A_1$	none	1
$A_3 + 3A_1$	none	1
$A_3 + A_2$	A_1	1
$A_4 + A_2$	none	2
$A_5 + A_2$	none	1
A_5	A_1	1

No. 113:

$(A_5 + A_2 + A_1, E_6 + A_2)$

$A_5 + A_2 + A_1$	none	3
$2A_2 + A_1$	none	3
$A_3 + A_1$	A_1	1
$A_4 + A_1$	none	1
$A_3 + A_2 + 2A_1$	none	3
$A_5 + 2A_1$	none	3
$A_3 + 3A_1$	none	3
A_2	$A_2 + A_1$	1
$A_4 + A_2$	none	3
$3A_2$	none	1
A_5	A_1	1

No. 114: $(A_5 + A_2 + A_1, E_8)$

$A_5 + A_2 + A_1$	none	3
$2A_2 + A_1$	none	3
$A_3 + A_1$	A_1	1
$A_4 + A_1$	none	1
$A_3 + A_2 + 2A_1$	none	3
$A_5 + 2A_1$	none	3
$A_3 + 3A_1$	none	3
A_2	$A_2 + A_1$	1
$A_4 + A_2$	none	3
$3A_2$	none	1
A_5	A_1	1

No. 115:

$(D_5 + A_2 + A_1, D_5 + A_2 + A_1)$

$A_2 + A_1$	A_3	1
$A_2 + A_1$	A_4	1
$A_3 + A_2 + A_1$	A_1	1
$A_4 + A_2 + A_1$	none	2
$A_4 + A_1$	none	1
$A_3 + 2A_1$	A_1	1
$A_4 + 2A_1$	none	2
$D_4 + 2A_1$	none	1
$D_5 + 2A_1$	none	1
$A_3 + 3A_1$	none	1
$A_4 + A_2$	none	1
$D_4 + A_2$	none	1
$D_5 + A_2$	none	2
D_5	A_1	1

No. 116:

$(A_4 + A_3 + A_1, A_4 + A_3 + A_1)$

$A_3 + A_2 + A_1$	none	2
$A_4 + A_2 + A_1$	none	2
$2A_2 + A_1$	none	1
$A_3 + A_1$	A_2	1
$2A_3 + A_1$	none	1
$A_4 + A_1$	A_1	1
$A_4 + A_1$	A_2	1
$A_2 + 2A_1$	A_1	1
$A_3 + A_2 + 2A_1$	none	1
$2A_2 + 2A_1$	none	2
$A_2 + 3A_1$	none	1
$A_3 + 3A_1$	none	1
$A_3 + A_2$	none	1
$A_3 + A_2$	A_1	1
$A_4 + A_2$	none	1
$A_4 + A_3$	none	2
$2A_3$	none	2

No. 117:

$(D_4 + A_3 + A_1, D_7 + A_1)$

A_1	$A_3 + A_2$	1
$A_3 + A_2 + A_1$	none	4
$A_3 + A_1$	A_3	2
$2A_3 + A_1$	none	2
$D_4 + A_1$	A_1	1
$A_3 + 2A_1$	none	1
$3A_1$	$2A_1$	1
$A_3 + 3A_1$	none	2
$A_3 + 3A_1$	A_1	1
$D_4 + 3A_1$	none	1
$6A_1$	none	1
$A_3 + A_2$	none	2
$D_4 + A_3$	none	4
$2A_3$	none	1

No. 118: $(A_7 + A_1, A_7 + A_1)$

$A_4 + A_2 + A_1$	none	2
$A_3 + A_1$	A_2	1
$A_6 + A_1$	none	2
$A_7 + A_1$	none	1
$A_5 + 2A_1$	none	1
$A_4 + A_2$	none	1
$2A_3$	none	1
A_5	A_1	1
A_6	none	1
A_7	none	2

No. 119: $(A_7 + A_1, E_7 + A_1)$

A_1	$2A_2$	1
$2A_3 + A_1$	none	3
$A_5 + A_1$	none	1
$A_7 + A_1$	none	3
$A_5 + 2A_1$	none	3
$2A_3$	none	3
A_5	A_1	1
A_7	none	3

No. 120: $(A_7 + A_1, E_8)$

A_1	$2A_2$	1
$2A_3 + A_1$	none	3
$A_5 + A_1$	none	1
$A_7 + A_1$	none	3
$A_5 + 2A_1$	none	3
$2A_3$	none	3
A_5	A_1	1
A_7	none	3

No. 121: $(D_7 + A_1, D_7 + A_1)$

A_1	A_6	1
$A_3 + A_1$	A_3	1
$A_6 + A_1$	none	2
$D_5 + A_1$	A_1	1
$D_6 + A_1$	none	1
$D_4 + A_3$	none	1
A_6	none	1
D_7	none	2

No. 122: $(E_7 + A_1, E_7 + A_1)$

$A_7 + A_1$	none	1
$D_6 + A_1$	none	1
$E_6 + A_1$	none	1
$E_7 + A_1$	none	1
$2A_1$	A_5	1
A_7	none	1
D_6	A_1	1
E_7	none	1

No. 123: $(E_7 + A_1, E_8)$

none	$A_5 + A_1$	1
$E_7 + A_1$	none	3
$D_6 + 2A_1$	none	3
A_7	none	3
E_6	none	1

No. 124: $(4A_2, E_6 + A_2)$

$3A_2 + A_1$	none	4
$2A_2 + 2A_1$	none	12
$A_2 + 3A_1$	none	4
$4A_1$	none	3
$2A_2$	A_1	6
$4A_2$	none	2

No. 125: $(4A_2, E_8)$

$3A_2 + A_1$	none	4
$2A_2 + 2A_1$	none	12
$A_2 + 3A_1$	none	4
$4A_1$	none	3
$2A_2$	A_1	6
$4A_2$	none	2

No. 126: $(A_4 + 2A_2, A_4 + 2A_2)$

$A_3 + A_2 + A_1$	none	6
$A_4 + A_2 + A_1$	none	6
$3A_2 + A_1$	none	3
$A_3 + 2A_1$	none	1
$A_2 + 3A_1$	none	3
$2A_2$	A_1	2
$2A_2$	A_2	1
A_4	A_1	1

No. 127: $(2A_3 + A_2, D_6 + A_2)$

$2A_2 + A_1$	none	4
$A_3 + A_1$	A_1	2
$2A_3 + A_1$	none	6
$A_3 + A_2 + 2A_1$	none	6
$5A_1$	none	3
A_2	$2A_1$	1
A_2	$2A_2$	1
$3A_2$	none	4

No. 128: $(A_6 + A_2, A_6 + A_2)$

$A_3 + A_2 + A_1$	none	3
$A_4 + A_2 + A_1$	none	3
$A_5 + A_1$	none	1
$A_6 + A_1$	none	3
$A_5 + A_2$	none	3
$2A_2$	A_2	1
A_4	A_1	1

No. 129: $(D_6 + A_2, D_6 + A_2)$

$2A_3 + A_1$	none	1
$A_5 + A_1$	none	2
$D_4 + A_1$	A_1	1
$D_6 + A_1$	none	2
$A_2 + 2A_1$	A_3	1
A_2	A_5	1
$A_5 + A_2$	none	2
$D_5 + A_2$	none	2

No. 130: $(E_6 + A_2, E_6 + A_2)$

$A_5 + A_2 + A_1$	none	1
$D_5 + A_1$	none	1
$E_6 + A_1$	none	1
$A_5 + 2A_1$	none	2
A_2	A_4	1
$D_5 + A_2$	none	2
$E_6 + A_2$	none	2
A_5	A_1	1

No. 131: $(E_6 + A_2, E_8)$

$A_5 + A_2 + A_1$	none	1
$D_5 + A_1$	none	1
$E_6 + A_1$	none	1
$A_5 + 2A_1$	none	2
A_2	A_4	1
$D_5 + A_2$	none	2
$E_6 + A_2$	none	2
A_5	A_1	1

No. 132: $(A_5 + A_3, A_5 + A_3)$

$A_3 + A_2 + A_1$	none	2
$A_3 + A_1$	A_1	1
$A_3 + A_1$	A_2	1
$2A_3 + A_1$	none	1
$2A_2 + 2A_1$	none	1
$A_5 + 2A_1$	none	1
$A_4 + A_2$	none	2
$A_5 + A_2$	none	2
$3A_2$	none	1
$A_4 + A_3$	none	4
A_5	A_2	1

No. 133: $(D_5 + A_3, D_5 + A_3)$

$A_3 + A_2 + 2A_1$	none	1
$A_3 + 2A_1$	A_1	1
$A_4 + 2A_1$	none	1
$A_4 + A_2$	none	2
$D_4 + A_2$	none	1
$D_5 + A_2$	none	2
A_3	A_3	1
A_3	A_4	1
$A_4 + A_3$	none	2
$D_4 + A_3$	none	1
$D_5 + A_3$	none	1
D_5	A_2	1

No. 134: $(D_5 + A_3, D_8)$

none	$A_4 + A_2$	1
$2A_3 + 2A_1$	none	1
$D_4 + 2A_1$	none	1
$D_5 + 2A_1$	none	1
$A_3 + 4A_1$	none	2
$A_4 + A_2$	none	4
A_3	$2A_1$	1
A_3	A_3	1
$D_4 + A_3$	none	2
$D_5 + A_3$	none	4

No. 135: $(D_5 + A_3, E_8)$

none	$A_4 + A_2$	1
$2A_3 + 2A_1$	none	1
$D_4 + 2A_1$	none	1
$D_5 + 2A_1$	none	1
$A_3 + 4A_1$	none	2
$A_4 + A_2$	none	4
A_3	$2A_1$	1
A_3	A_3	1
$D_4 + A_3$	none	2
$D_5 + A_3$	none	4

No. 136: $(2A_4, 2A_4)$

$A_3 + A_2 + A_1$	none	2
$A_4 + A_2 + A_1$	none	2
$2A_2 + 2A_1$	none	2
$2A_2$	A_1	1
$A_4 + A_3$	none	4
$2A_3$	none	3
A_4	A_2	2
$2A_4$	none	2

No. 137: $(2A_4, E_8)$

$A_3 + A_2 + A_1$	none	2
$A_4 + A_2 + A_1$	none	2
$2A_2 + 2A_1$	none	2
$2A_2$	A_1	1
$A_4 + A_3$	none	4
$2A_3$	none	3
A_4	A_2	2
$2A_4$	none	2

No. 138: $(D_4 + A_4, D_4 + A_4)$

$A_3 + A_2 + A_1$	none	3
$A_2 + 3A_1$	A_1	1
$A_4 + A_3$	none	3
$D_4 + A_3$	none	3
$2A_3$	none	3
A_4	A_3	3
D_4	A_2	1

No. 139: (A_8, A_8)

$A_6 + A_1$	none	1
$A_5 + A_2$	none	1
$A_4 + A_3$	none	2
A_4	A_2	1
A_7	none	3
A_8	none	2

No. 140: (A_8, E_8)

$A_6 + A_1$	none	1
$A_5 + A_2$	none	1
$A_4 + A_3$	none	2
A_4	A_2	1
A_7	none	3
A_8	none	2

No. 141: $(2D_4, D_8)$

none	$2A_3$	1
$4A_1$	$2A_1$	1
$A_3 + 4A_1$	none	2
$D_4 + A_3$	none	4
$2A_3$	none	6
D_4	A_3	4
$2D_4$	none	2

No. 143: (D_8, D_8)

none	A_7	1
$D_5 + A_3$	none	1
A_7	none	2
D_4	A_3	1
D_7	none	1
D_8	none	2

No. 144: (D_8, E_8)

none	$2A_3$	1
none	A_7	1
$D_6 + 2A_1$	none	1
A_7	none	4
$2D_4$	none	2
D_8	none	4

No. 145: (E_8, E_8)

none	A_7	1
$E_7 + A_1$	none	1
D_8	none	2
E_8	none	2

No. 154:
 $(A_5 + A_2 + 2A_1, E_8 + A_1)$

$A_2 + A_1$	$A_2 + A_1$	1
$A_3 + A_2 + A_1$	A_1	1
$A_4 + A_2 + A_1$	none	1
$A_5 + A_2 + A_1$	none	1
$2A_2 + A_1$	none	1
$3A_2 + A_1$	none	1
$A_5 + A_1$	A_1	2
$A_3 + A_2 + 2A_1$	none	1
$2A_2 + 2A_1$	none	1
$A_3 + 2A_1$	A_1	1
$A_4 + 2A_1$	none	1
$A_5 + 2A_1$	none	1
$A_3 + 3A_1$	none	1
$A_3 + 4A_1$	none	1
$A_4 + A_2$	none	1
$A_5 + A_2$	A_1	1

No. 155:
 $(A_4 + A_3 + 2A_1, D_5 + A_4)$

$A_3 + A_2 + A_1$	none	2
$A_3 + A_2 + A_1$	A_1	2
$A_4 + A_2 + A_1$	none	2
$2A_2 + 2A_1$	none	2
$A_3 + 2A_1$	A_2	1
$2A_3 + 2A_1$	none	1
$A_2 + 3A_1$	none	1
$A_2 + 3A_1$	A_1	1
$A_3 + 4A_1$	none	1
$A_4 + A_3$	none	1
$2A_3$	none	1
A_4	$A_2 + A_1$	1
A_4	$2A_1$	1

No. 157: $(A_7 + 2A_1, E_8 + A_1)$

$2A_3 + A_1$	none	2
$A_5 + A_1$	A_1	2
$A_7 + A_1$	none	2
$2A_1$	$2A_2$	1
$2A_3 + 2A_1$	none	1
$A_5 + 2A_1$	none	2
$2A_3$	none	1
A_7	none	1
A_7	A_1	1

No. 158: $(D_7 + 2A_1, D_9)$

none	$A_6 + A_1$	1
$A_6 + A_1$	none	2
$A_3 + 2A_1$	A_3	1
$D_6 + 2A_1$	none	1
$D_4 + A_3$	none	1
D_5	$2A_1$	1
D_7	none	1

No. 159: $(E_7 + 2A_1, E_8 + A_1)$

A_1	$A_5 + A_1$	1
$A_7 + A_1$	none	1
$D_6 + A_1$	A_1	1
$E_6 + A_1$	none	1
$E_7 + A_1$	none	1
$D_6 + 2A_1$	none	1
A_7	none	1
E_7	A_1	1

No. 161:

$(2A_3 + A_2 + A_1, E_7 + A_2)$

$A_2 + A_1$	$2A_1$	1
$A_2 + A_1$	$2A_2$	1
$A_3 + A_2 + A_1$	A_1	2
$2A_2 + A_1$	none	1
$3A_2 + A_1$	none	2
$2A_3 + A_1$	none	2
$A_3 + A_2 + 2A_1$	none	2
$2A_2 + 2A_1$	none	2
$A_3 + 2A_1$	A_1	2
$2A_3 + 2A_1$	none	1
$5A_1$	none	1
$6A_1$	none	1
$3A_2$	none	1
$2A_3$	A_1	1

No. 162:

$(A_6 + A_2 + A_1, A_6 + A_2 + A_1)$

$A_3 + A_2 + A_1$	none	1
$A_4 + A_2 + A_1$	none	1
$A_5 + A_2 + A_1$	none	1
$2A_2 + A_1$	A_2	1
$A_4 + A_1$	A_1	1
$A_6 + A_1$	none	1
$A_3 + A_2 + 2A_1$	none	1
$A_5 + 2A_1$	none	1
$A_4 + A_2$	A_1	1
$A_5 + A_2$	none	1
A_6	A_1	1

No. 163:

$(D_6 + A_2 + A_1, E_7 + A_2)$

$A_2 + A_1$	$A_3 + A_1$	1
$A_2 + A_1$	A_5	1
$A_5 + A_2 + A_1$	none	1
$2A_3 + A_1$	none	1
$A_5 + A_1$	none	1
$A_5 + 2A_1$	none	1
$D_4 + 2A_1$	A_1	1
$D_6 + 2A_1$	none	1
$A_5 + A_2$	none	1
$D_5 + A_2$	none	1
D_6	A_1	1

No. 164:

$(E_6 + A_2 + A_1, E_8 + A_1)$

$A_2 + A_1$	A_4	1
$A_5 + A_1$	A_1	1
$A_5 + 2A_1$	none	1
$D_5 + 2A_1$	none	1
$A_5 + A_2$	A_1	1
$D_5 + A_2$	none	1
$E_6 + A_2$	none	1
E_6	A_1	1

No. 165:

$(A_5 + A_3 + A_1, E_6 + A_3)$

$A_5 + A_2 + A_1$	none	2
$A_5 + A_1$	A_1	1
$A_5 + A_1$	A_2	1
$A_3 + A_2 + 2A_1$	none	2
$2A_2 + 2A_1$	none	1
$A_3 + 2A_1$	A_1	1
$2A_3 + 2A_1$	none	1
$A_4 + A_2$	none	1
$3A_2$	none	1
A_3	$A_2 + A_1$	1
$A_4 + A_3$	none	2

No. 166:

 $(D_5 + A_3 + A_1, E_8 + A_1)$

A_1	$A_4 + A_2$	1
$A_4 + A_2 + A_1$	none	2
$A_3 + A_1$	$2A_1$	1
$A_3 + A_1$	A_3	1
$2A_3 + A_1$	A_1	1
$D_5 + A_1$	A_1	1
$D_4 + 3A_1$	none	1
$A_3 + 4A_1$	none	1
$A_4 + A_2$	none	1
$D_4 + A_3$	none	1
$D_5 + A_3$	none	2

No. 167: $(2A_4 + A_1, E_8 + A_1)$

$2A_2 + A_1$	A_1	1
$2A_3 + A_1$	none	1
$A_4 + A_1$	A_2	2
$A_3 + A_2 + 2A_1$	none	2
$2A_2 + 2A_1$	none	1
$A_4 + A_2$	A_1	2
$A_4 + A_3$	none	2
$2A_3$	none	1
$2A_4$	none	1

No. 168: $(A_8 + A_1, A_8 + A_1)$

$A_5 + A_2 + A_1$	none	1
$A_4 + A_1$	A_2	1
$A_7 + A_1$	none	1
$A_4 + A_3$	none	1
A_6	A_1	1
A_7	none	1
A_8	none	1

No. 169: $(A_8 + A_1, E_8 + A_1)$

$A_5 + A_2 + A_1$	none	1
$A_4 + A_1$	A_2	1
$A_7 + A_1$	none	1
$A_4 + A_3$	none	1
A_6	A_1	1
A_7	none	1
A_8	none	1

No. 171: $(D_8 + A_1, E_8 + A_1)$

A_1	$2A_3$	1
A_1	A_7	1
$A_7 + A_1$	none	2
$D_6 + A_1$	A_1	1
A_7	none	1
$2D_4$	none	1
D_8	none	2

No. 172: $(E_8 + A_1, E_8 + A_1)$

A_1	A_7	1
D_8	none	1
E_7	A_1	1
E_8	none	1

No. 173: $(A_3 + 3A_2, E_6 + A_3)$

$2A_2 + A_1$	A_1	3
$3A_2 + A_1$	none	3
$A_3 + A_2 + 2A_1$	none	3
$2A_2 + 2A_1$	none	3
$A_2 + 3A_1$	none	1
$5A_1$	none	1
$A_3 + A_2$	A_1	3
$3A_2$	A_2	1
$4A_2$	none	1

No. 174: $(A_5 + 2A_2, E_7 + A_2)$

$A_4 + A_2 + A_1$	none	4
$A_5 + A_2 + A_1$	none	2
$2A_2 + A_1$	A_2	1
$2A_2 + 2A_1$	none	1
$A_3 + 3A_1$	none	1
$A_3 + A_2$	A_1	2
$4A_2$	none	1
A_5	A_1	1

No. 175: $(A_7 + A_2, E_7 + A_2)$

$A_5 + A_2 + A_1$	none	3
$2A_3 + A_1$	none	3
$A_7 + A_1$	none	3
A_2	$2A_2$	1
A_5	A_1	1

No. 176: $(E_7 + A_2, E_7 + A_2)$

$A_2 + A_1$	A_5	1
$A_7 + A_1$	none	1
$E_7 + A_1$	none	1
$E_6 + A_2$	none	1
D_6	A_1	1

No. 178: $(D_6 + A_3, D_9)$

none	$A_5 + A_2$	1
$A_3 + 2A_1$	A_3	1
$2A_3 + 2A_1$	none	1
$D_6 + 2A_1$	none	1
$A_5 + A_2$	none	2
$D_5 + A_3$	none	2
D_4	$2A_1$	1

No. 179: $(E_6 + A_3, E_6 + A_3)$

$A_5 + A_2 + A_1$	none	1
$A_5 + A_1$	A_1	1
$D_5 + A_2$	none	1
$E_6 + A_2$	none	1
A_3	A_4	1
$D_5 + A_3$	none	1
E_6	A_2	1

No. 180: $(A_5 + A_4, A_5 + A_4)$

$A_5 + A_2 + A_1$	none	1
$3A_2 + A_1$	none	1
$2A_3 + A_1$	none	1
$A_4 + A_1$	A_2	1
$A_3 + A_2$	A_1	1
$A_4 + A_3$	none	2
$2A_4$	none	2
A_5	A_2	1

No. 181: $(D_5 + A_4, D_5 + A_4)$

$A_3 + A_2 + A_1$	A_1	1
$A_4 + A_2 + A_1$	none	1
$A_4 + A_3$	none	1
$D_4 + A_3$	none	1
$D_5 + A_3$	none	1
A_4	A_3	1
A_4	A_4	1
$2A_4$	none	1
D_5	A_2	1

No. 182: (A_9, A_9)

$A_7 + A_1$	none	1
$2A_4$	none	1
A_5	A_2	1
A_8	none	2

No. 183: $(D_5 + D_4, D_9)$

none	$A_4 + A_3$	1
$A_3 + 2A_1$	$2A_1$	1
$2A_3 + 2A_1$	none	1
$A_4 + A_3$	none	2
$D_4 + A_3$	none	1
$D_5 + A_3$	none	1
D_4	A_3	1
$2D_4$	none	1
D_5	A_3	2

No. 184: (D_9, D_9)

none	A_8	1
A_8	none	1
D_5	A_3	1
D_8	none	1

REFERENCES

- [1] Simon Brandhorst and Ichiro Shimada. Automorphism groups of certain Enriques surfaces, 2020. <http://www.math.sci.hiroshima-u.ac.jp/shimada/K3andEnriques.html>.

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