

# 1 BLT set 1 over GF(29)

Points on the quadric  $x_0^2 + x_1x_2 + x_3x_4$ :

$$P_1 = (0, 1, 0, 0, 0)$$

$$P_2 = (0, 0, 1, 0, 0)$$

$$P_3 = (0, 1, 14, 28, 14)$$

$$P_4 = (0, 1, 18, 14, 7)$$

$$P_5 = (0, 1, 8, 19, 24)$$

$$P_6 = (0, 1, 19, 7, 18)$$

$$P_7 = (0, 1, 11, 23, 26)$$

$$P_8 = (0, 1, 14, 1, 15)$$

$$P_9 = (0, 1, 21, 25, 27)$$

$$P_{10} = (0, 1, 26, 21, 25)$$

$$P_{11} = (0, 1, 12, 18, 9)$$

$$P_{12} = (0, 1, 19, 22, 11)$$

$$P_{13} = (0, 1, 15, 12, 6)$$

$$P_{14} = (0, 1, 12, 11, 20)$$

$$P_{15} = (0, 1, 2, 24, 12)$$

$$P_{16} = (0, 1, 18, 15, 22)$$

$$P_{17} = (0, 1, 15, 17, 23)$$

$$P_{18} = (0, 1, 3, 9, 19)$$

$$P_{19} = (0, 1, 3, 20, 10)$$

$$P_{20} = (0, 1, 17, 13, 21)$$

$$P_{21} = (0, 1, 26, 8, 4)$$

$$P_{22} = (0, 1, 27, 27, 28)$$

$$P_{23} = (0, 1, 21, 4, 2)$$

$$P_{24} = (0, 1, 8, 10, 5)$$

$$P_{25} = (0, 1, 27, 2, 1)$$

$$P_{26} = (0, 1, 10, 3, 16)$$

$$P_{27} = (0, 1, 17, 16, 8)$$

$$P_{28} = (0, 1, 11, 6, 3)$$

$$P_{29} = (0, 1, 2, 5, 17)$$

$$P_{30} = (0, 1, 10, 26, 13)$$

Stabilizer of order 1461600 is generated by:

$$g_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 28 & 0 & 0 & 0 \\ 0 & 0 & 28 & 0 & 0 \\ 0 & 0 & 0 & 28 & 0 \\ 0 & 0 & 0 & 0 & 28 \end{pmatrix}$$

$$g_2 = \begin{pmatrix} 10 & 0 & 0 & 13 & 8 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 25 & 0 & 0 & 20 & 5 \\ 8 & 0 & 0 & 20 & 20 \end{pmatrix}$$

$$g_3 = \begin{pmatrix} 12 & 0 & 0 & 24 & 17 \\ 0 & 28 & 0 & 0 & 0 \\ 0 & 0 & 28 & 0 & 0 \\ 23 & 0 & 0 & 8 & 10 \\ 12 & 0 & 0 & 11 & 8 \end{pmatrix}$$

$$g_4 = \begin{pmatrix} 19 & 0 & 0 & 16 & 21 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 26 & 1 & 8 & 4 \\ 25 & 4 & 0 & 19 & 19 \\ 8 & 8 & 0 & 18 & 19 \end{pmatrix}$$

$$g_5 = \begin{pmatrix} 17 & 0 & 0 & 24 & 17 \\ 0 & 2 & 7 & 28 & 14 \\ 0 & 25 & 2 & 4 & 2 \\ 23 & 2 & 14 & 19 & 18 \\ 12 & 4 & 28 & 14 & 19 \end{pmatrix}$$

$$g_6 = \begin{pmatrix} 22 & 0 & 0 & 26 & 16 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 11 & 1 & 6 & 3 \\ 21 & 3 & 0 & 25 & 16 \\ 16 & 6 & 0 & 6 & 25 \end{pmatrix}$$

$$g_7 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 25 & 0 & 0 & 0 \\ 0 & 0 & 7 & 0 & 0 \\ 0 & 0 & 0 & 28 & 0 \\ 0 & 0 & 0 & 0 & 28 \end{pmatrix}$$

$$g_8 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 19 & 0 & 0 & 0 \\ 0 & 0 & 26 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$$

Induced action on the BLT-set:

The induced group has order 24360 and is generated by:

$$g_1 = \text{id}$$

$$g_2 = \text{id}$$

$$g_3 = \text{id}$$

$$g_4 = (2, 6)(3, 5)(7, 8)(9, 10)(11, 12)(13, 14)(15, 16)(17, 18)(19, 20)(21, 22)(23, 24)(25, 26)(27, 28)(29, 30)$$

$$g_5 = (1, 4)(2, 3)(5, 6)(7, 9)(8, 10)(11, 13)(12, 14)(15, 17)(16, 18)(19, 21)(20, 22)(23, 25)(24,$$

26)(27, 29)(28, 30)

$g_6 = (2, 5)(3, 4)(6, 8)(7, 16)(9, 30)(10, 14)(11, 28)(12, 23)(13, 20)(15, 24)(17, 22)(19, 26)(21, 25)(27, 29)$

$g_7 = (3, 6, 18, 15, 28, 27, 23, 8, 12, 19, 29, 7, 20, 9)(4, 11, 5, 13, 26, 21, 25, 16, 14, 24, 17, 30, 10, 22)$

$g_8 = (3, 26, 19, 22, 28, 14, 9, 13, 12, 10, 15, 16, 20, 5, 8, 30, 18, 25, 7, 11, 23, 17, 6, 21, 29, 4, 27, 24)$

Kernel has order 60 and is generated by:

$$b_1 = \begin{pmatrix} 26 & 0 & 0 & 4 & 27 \\ 0 & 28 & 0 & 0 & 0 \\ 0 & 0 & 28 & 0 & 0 \\ 1 & 0 & 0 & 27 & 15 \\ 27 & 0 & 0 & 2 & 27 \end{pmatrix}$$

$$b_2 = \begin{pmatrix} 22 & 0 & 0 & 3 & 13 \\ 0 & 28 & 0 & 0 & 0 \\ 0 & 0 & 28 & 0 & 0 \\ 8 & 0 & 0 & 25 & 16 \\ 13 & 0 & 0 & 6 & 25 \end{pmatrix}$$

$$b_3 = \begin{pmatrix} 28 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$$

The kernel has 871 orbits on the quadric.

The orbit length are  $[30^{841}, 1^{30}]$

Induced action on orbit  $O_2 = \{3, 60, 2497, 2554, 2611, 2668, 2725, 2782, 2839, 2896, 2953, 3010, 3067, 3124, 3181, 3238, 3295, 3352, 3409, 3466, 3523, 3580, 3637, 3694, 3751, 3808, 3865, 3922, 3979, 4036, 4093, 4150, 4207, 4264, 4321, 4378, 4435, 4492, 4549, 4606, 4663, 4720, 4777, 4834, 4891, 4948, 5005, 5062, 5119, 5176, 5233, 5290, 5347, 5404, 5461, 5518, 5575, 5632, 5689, 5746, 5803, 5860, 5917, 5974, 6031, 6088, 6145, 6202, 6259, 6316, 6373, 6430, 6487, 6544, 6601, 6658, 6715, 6772, 6829, 6886, 6943, 7000, 7057, 7114, 7171, 7228, 7285, 7342, 7399, 7456, 7513, 7570, 7627, 7684, 7741, 7798, 7855, 7912, 7969, 8026, 8083, 8140, 8197, 8254, 8311, 8368, 8425, 8482, 8539, 8596, 8653, 8710, 8767, 8824, 8881, 8938, 8995, 9052, 9109, 9166, 9223, 9280, 9337, 9394, 9451, 9508, 9565, 9622, 9679, 9736, 9793, 9850, 9907, 9964, 10021, 10078, 10135, 10192, 10249, 10306, 10363, 10420, 10477, 10534, 10591, 10648, 10705, 10762, 10819, 10876, 10933, 10990, 11047, 11104, 11161, 11218, 11275, 11332, 11389, 11446, 11503, 11560, 11617, 11674, 11731, 11788, 11845, 11902, 11959, 12016, 12073, 12130, 12187, 12244, 12301, 12358, 12415, 12472, 12529, 12586, 12643, 12700, 12757, 12814, 12871, 12928, 12985, 13042, 13099, 13156, 13213, 13270, 13327, 13384, 13441, 13498, 13555, 13612, 13669, 13726, 13783, 13840, 13897, 13954, 14011, 14068, 14125, 14182, 14239, 14296, 14353, 14410, 14467, 14524, 14581, 14638, 14695, 14752, 14809, 14866, 14923, 14980, 15037, 15094, 15151, 15208, 15265, 15322, 15379, 15436, 15493, 15550, 15607, 15664, 15721, 15778, 15835, 15892, 15949, 16006, 16063, 16120, 16177, 16234, 16291, 16348, 16405, 16462, 16519, 16576, 16633, 16690, 16747, 16804, 16861, 16918, 16975, 17032, 17089, 17146, 17203, 17260, 17317, 17374, 17431, 17488, 17545, 17602, 17659, 17716, 17773, 17830, 17887, 17944, 18001, 18058, 18115, 18172, 18229, 18286, 18343, 18400, 18457, 18514, 18571, 18628, 18685, 18742, 18799, 18856, 18913, 18970, 19027, 19084, 19141, 19198, 19255, 19312, 19369, 19426, 19483, 19540, 19597, 19654, 19711, 19768, 19825, 19882, 19939, 19996, 20053, 20110, 20167, 20224, 20281, 20338, 20395, 20452, 20509, 20566, 20623, 20680, 20737, 20794, 20851, 20908, 20965, 21022, 21079, 21136, 21193, 21250, 21307, 21364, 21421, 21478, 21535, 21592, 21649, 21706, 21763, 21820, 21877, 21934, 21991, 22048, 22105, 22162, 22219, 22276, 22333, 22390, 22447, 22504, 22561, 22618, 22675, 22732, 22789, 22846, 22903, 22960, 23017, 23074, 23131, 23188, 23245, 23302, 23359, 23416, 23473, 23530, 23587, 23644, 23701, 23758, 23815, 23872, 23929, 23986, 24043, 24100, 24157, 24214, 24271, 24328, 24385, 24442, 24499, 24556, 24613, 24670, 24727, 24784, 24841, 24898, 24955, 25012, 25069, 25126, 25183, 25240, 25297, 25354, 25411, 25468, 25525, 25582, 25639, 25696, 25753, 25810, 25867, 25924, 25981, 26038, 26095, 26152, 26209, 26266, 26323, 26380, 26437, 26494, 26551, 26608, 26665, 26722, 26779, 26836, 26893, 26950, 27007, 27064, 27121, 27178, 27235, 27292, 27349, 27406, 27463, 27520, 27577, 27634, 27691, 27748, 27805, 27862, 27919, 27976, 28033, 28090, 28147, 28204, 28261, 28318, 28375, 28432, 28489, 28546, 28603, 28660, 28717, 28774, 28831, 28888, 28945, 29002, 29059, 29116, 29173, 29230, 29287, 29344, 29401, 29458, 29515, 29572, 29629, 29686, 29743, 29800, 29857, 29914, 29971, 30028, 30085, 30142, 30199, 30256, 30313, 30370, 30427, 30484, 30541, 30598, 30655, 30712, 30769, 30826, 30883, 30940, 30997, 31054, 31111, 31168, 31225, 31282, 31339, 31396, 31453, 31510, 31567, 31624, 31681, 31738, 31795, 31852, 31909, 31966, 32023, 32080, 32137, 32194, 32251, 32308, 32365, 32422, 32479, 32536, 32593, 32650, 32707, 32764, 32821, 32878, 32935, 32992, 33049, 33106, 33163, 33220, 33277, 33334, 33391, 33448, 33505, 33562, 33619, 33676, 33733, 33790, 33847, 33904, 33961, 34018, 34075, 34132, 34189, 34246, 34303, 34360, 34417, 34474, 34531, 34588, 34645, 34702, 34759, 34816, 34873, 34930, 34987, 35044, 35101, 35158, 35215, 35272, 35329, 35386, 35443, 35500, 35557, 35614, 35671, 35728, 35785, 35842, 35899, 35956, 36013, 36070, 36127, 36184, 36241, 36298, 36355, 36412, 36469, 36526, 36583, 36640, 36697, 36754, 36811, 36868, 36925, 36982, 37039, 37096, 37153, 37210, 37267, 37324, 37381, 37438, 37495, 37552, 37609, 37666, 37723, 37780, 37837, 37894, 37951, 38008, 38065, 38122, 38179, 38236, 38293, 38350, 38407, 38464, 38521, 38578, 38635, 38692, 38749, 38806, 38863, 38920, 38977, 39034, 39091, 39148, 39205, 39262, 39319, 39376, 39433, 39490, 39547, 39604, 39661, 39718, 39775, 39832, 39889, 39946, 40003, 40060, 40117, 40174, 40231, 40288, 40345, 40402, 40459, 40516, 40573, 40630, 40687, 40744, 40801, 40858, 40915, 40972, 41029, 41086, 41143, 41200, 41257, 41314, 41371, 41428, 41485, 41542, 41599, 41656, 41713, 41770, 41827, 41884, 41941, 42000, 42057, 42114, 42171, 42228, 42285, 42342, 42400, 42457, 42514, 42571, 42628, 42685, 42742, 42800, 42857, 42914, 42971, 43028, 43085, 43142, 43200, 43257, 43314, 43371, 43428, 43485, 43542, 43600, 43657, 43714, 43771, 43828, 43885, 43942, 44000, 44057, 44114, 44171, 44228, 44285, 44342, 44400, 44457, 44514, 44571, 44628, 44685, 44742, 44800, 44857, 44914, 44971, 45028, 45085, 45142, 45200, 45257, 45314, 45371, 45428, 45485, 45542, 45600, 45657, 45714, 45771, 45828, 45885, 45942, 46000, 46057, 46114, 46171, 46228, 46285, 46342, 46400, 46457, 46514, 46571, 46628, 46685, 46742, 46800, 46857, 46914, 46971, 47028, 47085, 47142, 47200, 47257, 47314, 47371, 47428, 47485, 47542, 47600, 47657, 47714, 47771, 47828, 47885, 47942, 48000, 48057, 48114, 48171, 48228, 48285, 48342, 48400, 48457, 48514, 48571, 48628, 48685, 48742, 48800, 48857, 48914, 48971, 49028, 49085, 49142, 49200, 49257, 49314, 49371, 49428, 49485, 49542, 49600, 49657, 49714, 49771, 49828, 49885, 49942, 50000, 50057, 50114, 50171, 50228, 50285, 50342, 50400, 50457, 50514, 50571, 50628, 50685, 50742, 50800, 50857, 50914, 50971, 51028, 51085, 51142, 51200, 51257, 51314, 51371, 51428, 51485, 51542, 51600, 51657, 51714, 51771, 51828, 51885, 51942, 52000, 52057, 52114, 52171, 52228, 52285, 52342, 52400, 52457, 52514, 52571, 52628, 52685, 52742, 52800, 52857, 52914, 52971, 53028, 53085, 53142, 53200, 53257, 53314, 53371, 53428, 53485, 53542, 53600, 53657, 53714, 53771, 53828, 53885, 53942, 54000, 54057, 54114, 54171, 54228, 54285, 54342, 54400, 54457, 54514, 54571, 54628, 54685, 54742, 54800, 54857, 54914, 54971, 55028, 55085, 55142, 55200, 55257, 55314, 55371, 55428, 55485, 55542, 55600, 55657, 55714, 55771, 55828, 55885, 55942, 56000, 56057, 56114, 56171, 56228, 56285, 56342, 56400, 56457, 56514, 56571, 56628, 56685, 56742, 56800, 56857, 56914, 56971, 57028, 57085, 57142, 57200, 57257, 57314, 57371, 57428, 57485, 57542, 57600, 57657, 57714, 57771, 57828, 57885, 57942, 58000, 58057, 58114, 58171, 58228, 58285, 58342, 58400, 58457, 58514, 58571, 58628, 58685, 58742, 58800, 58857, 58914, 58971, 59028, 59085, 59142, 59200, 59257, 59314, 59371, 59428, 59485, 59542, 59600, 59657, 59714, 59771, 59828, 59885, 59942, 60000, 60057, 60114, 60171, 60228, 60285, 60342, 60400, 60457, 60514, 60571, 60628, 60685, 60742, 60800, 60857, 60914, 60971, 61028, 61085, 61142, 61200, 61257, 61314, 61371, 61428, 61485, 61542, 61600, 61657, 61714, 61771, 61828, 61885, 61942, 62000, 62057, 62114, 62171, 62228, 62285, 62342, 62400, 62457, 62514, 62571, 62628, 62685, 62742, 62800, 62857, 62914, 62971, 63028, 63085, 63142, 63200, 63257, 63314, 63371, 63428, 63485, 63542, 63600, 63657, 63714, 63771, 63828, 63885, 63942, 64000, 64057, 64114, 64171, 64228, 64285, 64342, 64400, 64457, 64514, 64571, 64628, 64685, 64742, 64800, 64857, 64914, 64971, 65028, 65085, 65142, 65200, 65257, 65314, 65371, 65428, 65485, 65542, 65600, 65657, 65714, 65771, 65828, 65885, 65942, 66000, 66057, 66114, 66171, 66228, 66285, 66342, 66400, 66457, 66514, 66571, 66628, 66685, 66742, 66800, 66857, 66914, 66971, 67028, 67085, 67142, 67200, 67257, 67314, 67371, 67428, 67485, 67542, 67600, 67657, 67714, 67771, 67828, 67885, 67942, 68000, 68057, 68114, 68171, 68228, 68285, 68342, 68400, 68457, 68514, 68571, 68628, 68685, 68742, 68800, 68857, 68914, 68971, 69028, 69085, 69142, 69200, 69257, 69314, 69371, 69428, 69485, 69542, 69600, 69657, 69714, 69771, 69828, 69885, 69942, 70000, 70057, 70114, 70171, 70228, 70285, 70342, 70400, 70457, 70514, 70571, 70628, 70685, 70742, 70800, 70857, 70914, 70971, 71028, 71085, 71142, 71200, 71257, 71314, 71371, 71428, 71485, 71542, 71600, 71657, 71714, 71771, 71828, 71885, 71942, 72000, 72057, 72114, 72171, 72228, 72285, 72342, 72400, 72457, 72514, 72571, 72628, 72685, 72742, 72800, 72857, 72914, 72971, 73028, 73085, 73142, 73200, 73257, 73314, 73371, 73428, 73485, 73542, 73600, 73657, 73714, 73771, 73828, 73885, 73942, 74000, 74057, 74114, 74171, 74228, 74285, 74342, 74400, 74457, 74514, 74571, 74628, 74685, 74742, 74800, 74857, 74914, 74971, 75028, 75085, 75142, 75200, 75257, 75314, 75371, 75428, 75485, 75542, 75600, 75657, 75714, 75771, 75828, 75885, 75942, 76000, 76057, 76114, 76171, 76228, 76285, 76342, 76400, 76457, 76514, 76571, 76628, 76685, 76742, 76800, 76857, 76914, 76971, 77028, 77085, 77142, 77200, 77257, 77314, 77371, 77428, 77485, 77542, 77600, 77657, 77714, 77771, 77828, 77885, 77942, 78000, 78057, 78114, 78171, 78228, 78285, 78342, 78400, 78457, 78514, 78571, 78628, 78685, 78742, 78800, 78857, 78914, 78971, 79028, 79085, 79142, 79200, 79257, 79314, 79371, 79428, 79485, 79542, 79600, 79657, 79714, 79771, 79828, 79885, 79942, 80000, 80057, 80114, 80171, 80228, 80285, 80342, 80400, 80457, 80514, 80571, 80628, 80685, 80742, 80800, 80857, 80914, 80971, 81028, 81085, 81142, 81200, 81257, 81314, 81371, 81428, 81485, 81542, 81600, 81657, 81714, 81771, 81828, 81885, 81942, 82000, 82057, 82114, 82171, 82228, 82285, 82342, 82400, 82457, 82514, 82571, 82628, 82685, 82742, 82800, 82857, 82914, 82971, 83028, 83085, 83142, 83200, 83257, 83314, 83371, 83428, 83485, 83542, 83600, 83657, 83714, 83771, 83828, 83885, 83942, 84000, 84057, 84114, 84171, 84228, 84285, 84342, 84400, 84457, 84514, 84571, 84628, 84685, 84742, 84800, 84857, 84914, 84971, 85028, 85085, 85142, 85200, 85257, 85314, 85371, 85428, 85485, 85542, 85600, 85657, 85714, 85771, 85828, 85885, 85942, 86000, 86057, 86114, 86171, 86228, 86285, 86342, 86400, 86457, 86514, 86571, 86628, 86685, 86742, 86800, 86857, 86914, 86971, 87028, 87085, 87142, 87200, 87257, 87314, 87371, 87428, 87485, 87542, 87600, 87657, 87714, 87771, 87828, 87885, 87942, 88000, 88057, 88114, 88171, 88228, 88285, 88342, 88400, 88457, 88514, 88571, 88628, 88685, 88742, 88800, 88857, 88914, 88971, 89028, 89085, 89142, 89200, 89257, 89314, 89371, 89428, 89485, 89542, 89600, 89657, 89714, 89771, 89828, 89885, 89942, 90000, 90057, 90114, 90171, 90228, 90285, 90342, 90400, 90457, 90514, 90571, 90628, 90685, 90742, 90800, 90857, 90914, 90971, 91028, 91085, 91142, 91200, 91257, 91314, 91371, 91428, 91485, 91542, 91600, 91657, 91714, 91771, 91828, 91885, 91942, 92000, 92057, 92114, 92171, 92228, 92285, 92342, 92400, 92457, 92514, 92571, 92628, 92685, 92742, 92800, 92857, 92914, 92971, 93028, 93085, 93142, 93200, 93257, 93314, 93371, 93428, 93485, 93542, 93600, 93657, 93714, 93771, 93828, 93885, 93942, 94000, 94057, 94114, 94171, 94228, 94285, 94342, 94400, 94457, 94514, 94571, 94628, 94685, 94742, 94800, 94857, 94914, 94971, 95028, 95085, 95142, 95200, 95257, 95314, 95371, 95428, 95485, 95542, 95600, 95657, 95714, 95771, 95828, 95885, 95942, 96000, 96057, 96114, 96171, 96228, 96285, 96342, 96400, 96457, 96514, 96571, 96628, 96685, 96742, 96800, 96857, 96914, 96971, 97028, 97085, 97142, 97200, 97257, 97314, 97371, 97428, 97485, 97542, 97600, 97657, 97714, 97771, 97828, 97885, 97942, 98000, 98057, 98114, 98171, 98228, 98285, 98342, 98400, 98457, 98514, 98571, 98628, 98685, 98742, 98800, 98857, 98914, 98971, 99028, 99085, 99142, 99200, 99257, 99314, 99371, 99428, 99485, 99542, 99600, 99657, 99714, 99771, 99828, 99885, 99942, 100000, 100057, 100114, 100171, 100228, 100285, 100342, 100400, 100457, 100514, 100571, 100628, 100685, 100742, 100800, 100857, 100914, 100971, 101028, 101085, 101142, 101200, 101257, 101314, 101371, 101428, 101485, 101542, 101600, 101657, 101714, 101771, 101828, 101885, 101942, 102000, 102057, 102114, 102171, 102228, 102285, 102342, 102400, 102457, 102514, 102571, 102628, 102685, 102742, 102800, 102857, 102914, 102971, 103028, 103085, 103142, 103200, 103257, 103314, 103371, 103428, 103485, 103542, 1036$