List of full sensitivity spaced seeds for at most 3 mismatches

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Each spaced seed s is a periodic seed (b is a periodic block). It consists of n_b repetitions of the block and first n_d symbols of the blocks. Other parameters: w is the weight of the periodic seed, n_m is the maximum number of mismatches allowed to achieve the full sensitivity, L_{min} is the minimum length of a read required for the found seed.

We used the following selection criteria:

- by setting n_m and the length L of a read, we found all seeds of a maximum weight w;
- for a given weight w we found the shortest length L_{min} of reads when we are able to find seeds;
- among all seeds found for n_m , w and L_{min} , we used only seeds of maximum length.

If a seed s is found, then its reverse version \bar{s} (all digits are in the reverse order) can also be used. To form the seeds below lists of seed blocks b were used. Those blocks were found for sizes from 10 to 50 for $n_m = 3, 4, \ldots, 9$ and from 10 to 70 for $n_m = 2$. For each block size only sequences of maximum weight were used. There is a possibility that in a future longer seed blocks can be found and new spaced seeds can be formed for a given weight w (it will be possible to use them for shorter reads, i.e. L_{min} will be smaller).

- 1) $n_m = 3$, w = 16, $L_{min} = 41$, $n_b = 1$, $n_d = 12$, b = 1001101011111000, s = 10011010111110001001101011111
- 2) $n_m = 3$, w = 17, $L_{min} = 44$, $n_b = 2$, $n_d = 6$, b = 1101110000010, s = 110111000001011011110000010110111
- 3) $n_m = 3$, w = 17, $L_{min} = 44$, $n_b = 2$, $n_d = 6$, b = 1011110001000, s = 1011110001000101111100010001011111
- 4) $n_m = 3$, w = 18, $L_{min} = 46$, $n_b = 3$, $n_d = 3$, b = 11100010010, s = 111000100101111000100101111000100101111
- 5) $n_m = 3$, w = 19, $L_{min} = 47$, $n_b = 2$, $n_d = 3$, b = 111100010011010, s = 1111000100110101111100010011010111
- 6) $n_m = 3$, w = 19, $L_{min} = 47$, $n_b = 2$, $n_d = 3$, b = 111000100110101, s = 11100010011010111110001001101011111
- 7) $n_m = 3$, w = 20, $L_{min} = 48$, $n_b = 2$, $n_d = 4$, b = 111100010011010, s = 11110001001101011111000100110101111
- 8) $n_m = 3$, w = 21, $L_{min} = 50$, $n_b = 2$, $n_d = 6$, b = 101111000100110, s = 1011110001001101011111000100110101111
- 9) $n_m = 3$, w = 22, $L_{min} = 52$, $n_b = 2$, $n_d = 8$, b = 1101011111000100, s = 1101011111000100110111110001001101111
- 10) $n_m = 3$, w = 22, $L_{min} = 52$, $n_b = 2$, $n_d = 8$, b = 101011110001001, s = 101011111000100110101111100010011011111

- 15) $n_m = 3$, w = 25, $L_{min} = 60$, $n_b = 3$, $n_d = 1$, b = 101011110001001, s = 1010111100010011010111100010011010111100010011
- 16) $n_m = 3$, w = 25, $L_{min} = 60$, $n_b = 3$, $n_d = 1$, b = 101111000100110, s = 101111000100110101111000100110111110001001101

- 28) $n_m = 3$, w = 29, $L_{min} = 65$, $n_b = 3$, $n_d = 6$, b = 101111000100110, s = 10111100010011010111110001001101011111

- 44) $n_m = 3$, w = 34, $L_{min} = 76$, $n_b = 4$, $n_d = 2$, b = 1100010011010111,

1045) $n_m = 3$, w = 208, $L_{min} = 343$, $n_b = 7$, $n_d = 24$,

1046) $n_m = 3$, w = 208, $L_{min} = 343$, $n_b = 7$, $n_d = 24$,

1047) $n_m = 3$, w = 208, $L_{min} = 343$, $n_b = 7$, $n_d = 24$,

b = 11111100011011111110111110111010100101100

1048) $n_m = 3$, w = 209, $L_{min} = 344$, $n_b = 7$, $n_d = 25$,

1049) $n_m = 3$, w = 210, $L_{min} = 346$, $n_b = 7$, $n_d = 27$,

b = 111111000110111111101111101111010100101100,

1050) $n_m = 3$, w = 210, $L_{min} = 346$, $n_b = 7$, $n_d = 27$,

b = 11111000110111111101111101110101001011001

1051) $n_m = 3$, w = 211, $L_{min} = 347$, $n_b = 7$, $n_d = 28$,

b = 111111000110111111101111101111010100101100,

1052) $n_m = 3$, w = 212, $L_{min} = 349$, $n_b = 7$, $n_d = 30$,

b = 1111001101011111010111111110111111000100110,

1053) $n_m = 3$, w = 212, $L_{min} = 349$, $n_b = 7$, $n_d = 30$,

b = 1110011010111110101111111101111110001001101

- 1099) $n_m = 3$, w = 217, $L_{min} = 360$, $n_b = 8$, $n_d = 1$, b = 110111010100101100111111100011011111110111,

1108) $n_m = 3$, w = 217, $L_{min} = 360$, $n_b = 8$, $n_d = 1$,

1109) $n_m = 3$, w = 217, $L_{min} = 360$, $n_b = 8$, $n_d = 1$,

1110) $n_m = 3$, w = 217, $L_{min} = 360$, $n_b = 8$, $n_d = 1$,

b = 11111000110111111101111101110101001011001

1111) $n_m = 3$, w = 217, $L_{min} = 360$, $n_b = 8$, $n_d = 1$,

1112) $n_m = 3$, w = 217, $L_{min} = 360$, $n_b = 8$, $n_d = 1$,

1113) $n_m = 3$, w = 217, $L_{min} = 360$, $n_b = 8$, $n_d = 1$,

1114) $n_m = 3$, w = 217, $L_{min} = 360$, $n_b = 8$, $n_d = 1$,

1115) $n_m = 3$, w = 218, $L_{min} = 361$, $n_b = 8$, $n_d = 2$,

b = 1101111001101011111010111111110111111000100

1116) $n_m = 3$, w = 218, $L_{min} = 361$, $n_b = 8$, $n_d = 2$,

b = 1111001101011111010111111110111111000100110

1144) $n_m = 3$, w = 218, $L_{min} = 361$, $n_b = 8$, $n_d = 2$,

1145) $n_m = 3$, w = 218, $L_{min} = 361$, $n_b = 8$, $n_d = 2$,

1146) $n_m = 3$, w = 218, $L_{min} = 361$, $n_b = 8$, $n_d = 2$,

b = 11111100011011111110111110111010100101100

1147) $n_m = 3$, w = 218, $L_{min} = 361$, $n_b = 8$, $n_d = 2$,

b = 11111000110111111101111101110101001011001,

1148) $n_m = 3$, w = 218, $L_{min} = 361$, $n_b = 8$, $n_d = 2$,

1149) $n_m = 3$, w = 218, $L_{min} = 361$, $n_b = 8$, $n_d = 2$,

1150) $n_m = 3$, w = 218, $L_{min} = 361$, $n_b = 8$, $n_d = 2$,

1151) $n_m = 3$, w = 219, $L_{min} = 362$, $n_b = 8$, $n_d = 3$,

b = 1111001101011111010111111110111111000100110,

1152) $n_m = 3$, w = 219, $L_{min} = 362$, $n_b = 8$, $n_d = 3$,

b = 1110011010111110101111111101111110001001101

1261) $n_m = 3$, w = 241, $L_{min} = 392$, $n_b = 8$, $n_d = 33$,

b = 1011110011010111110101111111101111110001001

1262) $n_m = 3$, w = 242, $L_{min} = 393$, $n_b = 8$, $n_d = 34$,

1263) $n_m = 3$, w = 243, $L_{min} = 396$, $n_b = 8$, $n_d = 37$,

1264) $n_m = 3$, w = 243, $L_{min} = 396$, $n_b = 8$, $n_d = 37$,

1265) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

1266) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

b = 1101111001101011111010111111110111111000100

1267) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

b = 1011110011010111110101111111101111110001001,

1268) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

b = 1111001101011111010111111110111111000100110,

1269) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

b = 1110011010111110101111111101111110001001101

1288) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

1289) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

1290) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

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1292) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

1293) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

1294) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

b = 11111101111101110101001011001111111000110,

1295) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

b = 111110111110111101010010110011111110001101,

1296) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

b = 111101111101111010100101100111111100011011

1306) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

1307) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

1308) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

1309) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

1310) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

1311) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

1312) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

1313) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

1314) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

b = 11111000110111111101111101110101001011001

1315) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

b = 111100011011111110111110111101010010110011,

1316) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

1317) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,

1318) $n_m = 3$, w = 244, $L_{min} = 400$, $n_b = 9$, $n_d = 1$,