

^{53}Mn $Z = 25$ $N = 28$ [link to full NNDC output](#)

Based on ENSDF from Dec 2018, and mass evaluation from 2016

BE = 462.911 (0.000) MeV

Qbeta+ = 0.597 (0.001) MeV

| | Energy T | J+ | J- | J-other | T1/2 |
|------|----------|------------|-------|-----------------------|--------------------|
| 53MN | 1 | | 0.000 | 7/2- | 1 3.74E+6 Y 4 |
| 53MN | 2 | | 0.378 | 5/2- | 2 117 PS 6 |
| 53MN | 3 | | 1.290 | 3/2- | 3 0.55 PS 4 |
| 53MN | 4 | | 1.441 | 11/2- | 4 0.60 PS 8 |
| 53MN | 5 | | 1.620 | 9/2- | 5 0.48 PS 6 |
| 53MN | 6 | | 2.274 | 5/2- | 6 0.25 PS 5 |
| 53MN | 7 | | 2.407 | 3/2- | 7 0.11 PS 4 |
| 53MN | 8 | | | 2.448 | 8 |
| 53MN | 9 | | 2.563 | 13/2- | 9 10.7 PS 13 |
| 53MN | 10 | | 2.573 | 7/2- | 10 0.06 PS 2 |
| 53MN | 11 | | 2.671 | 1/2- | 11 21 FS +17-10 |
| 53MN | 12 | | 2.686 | 7/2- | 12 0.05 PS +4-2 |
| 53MN | 13 | | 2.693 | 15/2- | 13 2.7 PS 4 |
| 53MN | 14 | | 2.698 | 11/2- | 14 |
| 53MN | 15 | 2.707 1/2+ | | | 15 0.8 PS 3 |
| 53MN | 16 | | | 2.761 | 16 |
| 53MN | 17 | | 2.876 | 3/2- | 17 41 PS +14-11 |
| 53MN | 18 | | 2.913 | 3/2- | 18 58 FS +35-24 |
| 53MN | 19 | | | 2.947 (9/2)- | 19 0.06 PS 2 |
| 53MN | 20 | | | 2.967 | 20 |
| 53MN | 21 | | | 2.978 | 21 |
| 53MN | 22 | | | 3.007 (5/2)+ | 22 0.84 PS GT |
| 53MN | 23 | | | 3.060 (5/2-,7/2-) | 23 |
| 53MN | 24 | | 3.097 | 3/2- | 24 0.053 PS +46-21 |
| 53MN | 25 | | | 3.102 | 25 0.074 PS 13 |
| 53MN | 26 | | | 3.127 (5/2-) | 26 0.11 PS 2 |
| 53MN | 27 | | | 3.182 (3/2-,5/2-) | 27 0.07 PS 2 |
| 53MN | 28 | | 3.200 | 5/2- | 28 |
| 53MN | 29 | | | 3.249 (9/2)- | 29 |
| 53MN | 30 | | 3.381 | 7/2- | 30 |
| 53MN | 31 | | 3.426 | 13/2- | 31 0.7 PS +4-3 |
| 53MN | 32 | | 3.439 | 15/2- | 32 0.14 PS 2 |
| 53MN | 33 | | | 3.466 (3/2-,5/2,7/2-) | 33 |
| 53MN | 34 | | 3.480 | 1/2- | 34 |
| 53MN | 35 | | | 3.532 (3/2-,5/2,7/2-) | 35 |
| 53MN | 36 | | | 3.555 (11/2-) | 36 |
| 53MN | 37 | | | 3.595 (5/2-,7/2-) | 37 |

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|-------|----|--|-------|-------|-------|------------------|--|-----------------|
| 53MN | 38 | | | | 3.625 | + | | 38 |
| 53MN | 39 | | 3.666 | 5/2- | | | | 39 |
| 53MN | 40 | | | | 3.705 | (5/2-,7/2-) | | 40 |
| ----- | | | | | | | | |
| 53MN | 41 | | 3.710 | 7/2- | | | | 41 |
| 53MN | 42 | | | | 3.728 | | | 42 |
| 53MN | 43 | | | | 3.784 | + | | 43 |
| 53MN | 44 | | | | 3.850 | | | 44 |
| 53MN | 45 | | 3.898 | 1/2- | | | | 45 |
| 53MN | 46 | | 3.955 | 7/2- | | | | 46 |
| 53MN | 47 | | | | 3.960 | (5/2-,7/2-) | | 47 |
| 53MN | 48 | | | | 3.999 | (3/2-,5/2,7/2-) | | 48 |
| 53MN | 49 | | | | 4.021 | | | 49 |
| 53MN | 50 | | | | 4.062 | (7/2-) | | 50 |
| ----- | | | | | | | | |
| 53MN | 51 | | | | 4.066 | | | 51 |
| 53MN | 52 | | | | 4.069 | 3/2+,5/2+ | | 52 |
| 53MN | 53 | | | | 4.083 | (3/2,5/2,7/2-) | | 53 |
| 53MN | 54 | | | | 4.149 | | | 54 0.05 PS 1 |
| 53MN | 55 | | | | 4.169 | | | 55 |
| 53MN | 56 | | | | 4.238 | | | 56 |
| 53MN | 57 | | | | 4.266 | (5/2-,7/2-) | | 57 |
| 53MN | 58 | | | | 4.281 | | | 58 |
| 53MN | 59 | | | | 4.300 | 5/2-,7/2- | | 59 |
| 53MN | 60 | | | | 4.310 | | | 60 |
| ----- | | | | | | | | |
| 53MN | 61 | | | | 4.348 | 1/2-,3/2- | | 61 |
| 53MN | 62 | | | | 4.362 | 1/2-,3/2,5/2,7/2 | | 62- |
| 53MN | 63 | | 4.385 | 17/2- | | | | 63 0.16 PS +6-5 |
| 53MN | 64 | | | | 4.400 | | | 64 |
| 53MN | 65 | | 4.428 | 3/2- | | | | 65 |
| 53MN | 66 | | 4.438 | 3/2- | | | | 66 |
| 53MN | 67 | | | | 4.456 | | | 67 |
| 53MN | 68 | | | | 4.522 | (3/2+,5/2+) | | 68 |
| 53MN | 69 | | | | 4.552 | (5/2-,7/2-) | | 69 |
| 53MN | 70 | | | | 4.560 | 3/2-,5/2 | | 70 |
| ----- | | | | | | | | |
| 53MN | 71 | | | | 4.573 | 1/2-,3/2- | | 71 |
| 53MN | 72 | | | | 4.596 | | | 72 |
| 53MN | 73 | | | | 4.635 | (5/2-,7/2-) | | 73 |
| 53MN | 74 | | | | 4.650 | | | 74 |
| 53MN | 75 | | 4.719 | 1/2- | | | | 75 |
| 53MN | 76 | | | | 4.764 | (3/2-,5/2,7/2-) | | 76 |
| 53MN | 77 | | | | 4.780 | (1/2-,3/2-) | | 77 |
| 53MN | 78 | | | | 4.793 | (3/2-,5/2,7/2-) | | 78 |
| 53MN | 79 | | | | 4.806 | | | 79 |
| 53MN | 80 | | | | 4.838 | (5/2-,7/2-) | | 80 |
| ----- | | | | | | | | |
| 53MN | 81 | | | | 4.845 | | | 81 |
| 53MN | 82 | | | | 4.857 | | | 82 |

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|----------|-------|-------|--------|-------|-------|-------|-----------------|--|---------|-----|--|
| 53MN 83 | | | | | | 4.907 | | | | 83 | |
| 53MN 84 | | | | | | 4.929 | 5/2-, 7/2- | | | 84 | |
| 53MN 85 | | | | | | 4.945 | | | | 85 | |
| 53MN 86 | | | | 4.955 | 1/2- | | | | | 86 | |
| 53MN 87 | | | | | | 4.988 | 1/2, 3/2-, 5/2- | | | 87 | |
| 53MN 88 | | | | | | 5.007 | | | | 88 | |
| 53MN 89 | | 5.029 | 1/2+ | | | | | | | 89 | |
| 53MN 90 | | | | | | 5.044 | | | | 90 | |
| ----- | | | | | | | | | | | |
| 53MN 91 | | | | | | 5.054 | | | | 91 | |
| 53MN 92 | | | | | | 5.081 | (1/2-, 3/2-) | | | 92 | |
| 53MN 93 | | | | | | 5.095 | (1/2-, 3/2-) | | | 93 | |
| 53MN 94 | | | | | | 5.155 | | | | 94 | |
| 53MN 95 | | | | | | 5.240 | (5/2-, 7/2-) | | | 95 | |
| 53MN 96 | | | | | | 5.316 | | | | 96 | |
| 53MN 97 | | | | | | 5.371 | GE 9/2 | | | 97 | |
| 53MN 98 | | | | | | 5.434 | (7/2-) | | | 98 | |
| 53MN 99 | | | | | | 5.476 | | | | 99 | |
| 53MN 100 | | | | 5.491 | 1/2- | | | | | 100 | |
| ----- | | | | | | | | | | | |
| 53MN 101 | | | | | | 5.546 | 3/2+, 5/2+ | | | 101 | |
| 53MN 102 | | | | | | 5.579 | | | | 102 | |
| 53MN 103 | | | | | | 5.615 | (19/2-) | | 0.12 PS | 6 | |
| 53MN 104 | | | | | | 5.705 | | | | 104 | |
| 53MN 105 | | | | | | 5.801 | | | | 105 | |
| 53MN 106 | | | | | | 5.814 | (11/2-) | | | 106 | |
| 53MN 107 | | | | | | 5.860 | 3/2+, 5/2+ | | | 107 | |
| 53MN 108 | | | | | | 5.894 | | | | 108 | |
| 53MN 109 | | | | | | 5.954 | | | | 109 | |
| 53MN 110 | | | | | | 5.998 | 3/2-, 5/2, 7/2- | | | 110 | |
| ----- | | | | | | | | | | | |
| 53MN 111 | | | | | | 6.005 | | | | 111 | |
| 53MN 112 | | | | | | 6.040 | 3/2+, 5/2+ | | | 112 | |
| 53MN 113 | | | | | | 6.084 | | | | 113 | |
| 53MN 114 | | | | | | 6.119 | | | | 114 | |
| 53MN 115 | | | | | | 6.150 | | | | 115 | |
| 53MN 116 | | | | | | 6.177 | 3/2+, 5/2+ | | | 116 | |
| 53MN 117 | | | | | | 6.240 | | | | 117 | |
| 53MN 118 | | | | | | 6.320 | 3/2+, 5/2+ | | | 118 | |
| 53MN 119 | | | | | | 6.410 | | | | 119 | |
| 53MN 120 | | | | | | 6.490 | | | | 120 | |
| ----- | | | | | | | | | | | |
| 53MN 121 | | | | | | 6.520 | (1/2+) | | | 121 | |
| 53MN 122 | | | | 6.534 | 21/2- | | | | 0.32 PS | 18 | |
| 53MN 123 | | | | | | 6.540 | (7/2+, 9/2+) | | | 123 | |
| ----- | | | | | | | | | | | |
| S-p = | 6.560 | (| 0.001) | | | | | | | | |
| 53MN 124 | | | | | | 6.601 | 3/2+, 5/2+ | | | 124 | |
| 53MN 125 | | | | | | 6.730 | | | | 125 | |
| 53MN 126 | | | | | | 6.870 | 3/2+, 5/2+ | | | 126 | |
| 53MN 127 | | | | 6.977 | 3/2- | | | | | 127 | |

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|----------|--|-------|-------------|-------|-------------|-----|---------|--------|
| 53MN 128 | | | | 7.005 | (23/2-) | 128 | 0.83 PS | +17-14 |
| 53MN 129 | | | | 7.028 | 7/2+,9/2+ | 129 | | |
| 53MN 130 | | | | 7.094 | 5/2-,7/2- | 130 | | |
| ----- | | | | | | | | |
| 53MN 131 | | | | 7.150 | 3/2+,5/2+ | 131 | | |
| 53MN 132 | | | | 7.220 | | 132 | | |
| 53MN 133 | | | | 7.277 | 5/2-,7/2- | 133 | | |
| 53MN 134 | | | | 7.360 | 3/2+,5/2+ | 134 | | |
| 53MN 135 | | | | 7.385 | 5/2-,7/2- | 135 | | |
| 53MN 136 | | | | 7.420 | 1/2-,3/2- | 136 | | |
| 53MN 137 | | | | 7.461 | | 137 | | |
| 53MN 138 | | | | 7.473 | | 138 | | |
| 53MN 139 | | | | 7.495 | | 139 | | |
| 53MN 140 | | | | 7.507 | 5/2-,7/2- | 140 | | |
| ----- | | | | | | | | |
| 53MN 141 | | | | 7.528 | | 141 | | |
| 53MN 142 | | 7.547 | 1/2- | | | 142 | | |
| 53MN 143 | | | | 7.574 | | 143 | | |
| 53MN 144 | | | | 7.628 | (1/2-,3/2-) | 144 | | |
| 53MN 145 | | | | 7.667 | | 145 | | |
| 53MN 146 | | | | 7.710 | 5/2-,7/2- | 146 | | |
| 53MN 147 | | | | 7.758 | (5/2-,7/2-) | 147 | | |
| 53MN 148 | | | | 7.810 | (1/2-,3/2-) | 148 | | |
| 53MN 149 | | | | 7.899 | | 149 | | |
| 53MN 150 | | 7.918 | 5/2- | | | 150 | | |
| ----- | | | | | | | | |
| 53MN 151 | | 7.921 | 5/2- | | | 151 | | |
| 53MN 152 | | 7.928 | 5/2- | | | 152 | | |
| 53MN 153 | | | | 7.935 | 5/2-,7/2- | 153 | | |
| 53MN 154 | | | | 7.961 | | 154 | | |
| 53MN 155 | | | | 7.964 | (25/2-) | 155 | 0.17 PS | +6-4 |
| 53MN 156 | | 7.977 | 3/2- | | | 156 | | |
| 53MN 157 | | | | 7.994 | | 157 | | |
| 53MN 158 | | 8.007 | 5/2- | | | 158 | | |
| 53MN 159 | | | | 8.012 | | 159 | | |
| 53MN 160 | | | | 8.016 | | 160 | | |
| ----- | | | | | | | | |
| 53MN 161 | | 8.026 | 5/2- | | | 161 | | |
| 53MN 162 | | 8.028 | 5/2- | | | 162 | | |
| 53MN 163 | | | | 8.038 | | 163 | | |
| 53MN 164 | | | | 8.047 | | 164 | | |
| 53MN 165 | | 8.053 | 5/2- | | | 165 | | |
| 53MN 166 | | 8.057 | 5/2- | | | 166 | | |
| 53MN 167 | | | | 8.065 | | 167 | | |
| 53MN 168 | | | | 8.072 | | 168 | | |
| 53MN 169 | | | | 8.076 | | 169 | | |
| 53MN 170 | | 8.083 | 5/2- | | | 170 | | |
| ----- | | | | | | | | |
| 53MN 171 | | 8.087 | 5/2- | | | 171 | | |
| 53MN 172 | | 8.095 | 3/2 TO 7/2- | | | 172 | | |

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|----------|--|-------|-------|-------|-------------|-----|
| 53MN 173 | | | | 8.100 | | 173 |
| 53MN 174 | | | | 8.108 | | 174 |
| 53MN 175 | | | | 8.118 | | 175 |
| 53MN 176 | | | | 8.122 | | 176 |
| 53MN 177 | | | | 8.133 | | 177 |
| 53MN 178 | | | 8.135 | 3/2- | | 178 |
| 53MN 179 | | | 8.138 | 3/2- | | 179 |
| 53MN 180 | | 8.157 | 5/2+ | | | 180 |
| ----- | | | | | | |
| 53MN 181 | | | | 8.177 | 3/2-,5/2- | 181 |
| 53MN 182 | | | | 8.184 | | 182 |
| 53MN 183 | | | | 8.189 | 1/2-,3/2- | 183 |
| 53MN 184 | | | | 8.191 | | 184 |
| 53MN 185 | | | | 8.197 | | 185 |
| 53MN 186 | | | | 8.214 | | 186 |
| 53MN 187 | | | | 8.219 | | 187 |
| 53MN 188 | | | | 8.230 | | 188 |
| 53MN 189 | | | | 8.241 | | 189 |
| 53MN 190 | | | | 8.247 | 3/2-,5/2- | 190 |
| ----- | | | | | | |
| 53MN 191 | | | | 8.251 | 5/2,3/2 | 191 |
| 53MN 192 | | | 8.263 | 5/2- | | 192 |
| 53MN 193 | | | | 8.267 | (3/2-,5/2-) | 193 |
| 53MN 194 | | | | 8.271 | | 194 |
| 53MN 195 | | | | 8.274 | | 195 |
| 53MN 196 | | | | 8.291 | | 196 |
| 53MN 197 | | | 8.294 | 3/2- | | 197 |
| 53MN 198 | | | 8.302 | 5/2- | | 198 |
| 53MN 199 | | | | 8.312 | | 199 |
| 53MN 200 | | | | 8.320 | | 200 |
| ----- | | | | | | |
| 53MN 201 | | | 8.326 | 7/2- | | 201 |
| 53MN 202 | | | | 8.329 | 5/2 | 202 |
| 53MN 203 | | | 8.336 | 3/2- | | 203 |
| 53MN 204 | | | | 8.347 | | 204 |
| 53MN 205 | | | | 8.349 | | 205 |
| 53MN 206 | | | | 8.351 | | 206 |
| 53MN 207 | | | | 8.355 | | 207 |
| 53MN 208 | | | | 8.357 | | 208 |
| 53MN 209 | | | | 8.374 | | 209 |
| 53MN 210 | | | | 8.380 | | 210 |
| ----- | | | | | | |
| 53MN 211 | | | | 8.395 | | 211 |
| 53MN 212 | | | | 8.399 | (3/2-,5/2-) | 212 |
| 53MN 213 | | | 8.403 | 3/2- | | 213 |
| 53MN 214 | | | | 8.406 | | 214 |
| 53MN 215 | | | 8.420 | 3/2- | | 215 |
| 53MN 216 | | | 8.425 | 3/2- | | 216 |
| 53MN 217 | | | | 8.433 | | 217 |
| 53MN 218 | | | | 8.443 | | 218 |

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|----------|--|-------|------|-------|-----------------|-----|
| 53MN 219 | | | | 8.450 | | 219 |
| 53MN 220 | | | | 8.453 | 5/2(+) | 220 |
| ----- | | | | | | |
| 53MN 221 | | | | 8.459 | | 221 |
| 53MN 222 | | | | 8.466 | | 222 |
| 53MN 223 | | | | 8.477 | | 223 |
| 53MN 224 | | | | 8.483 | 3/2(-) | 224 |
| 53MN 225 | | | | 8.489 | | 225 |
| 53MN 226 | | 8.494 | 7/2- | | | 226 |
| 53MN 227 | | | | 8.501 | (3/2-,5/2) | 227 |
| 53MN 228 | | 8.505 | 7/2- | | | 228 |
| 53MN 229 | | | | 8.513 | 3/2-,5/2- | 229 |
| 53MN 230 | | 8.515 | 7/2- | | | 230 |
| ----- | | | | | | |
| 53MN 231 | | | | 8.519 | (3/2+,5/2+) | 231 |
| 53MN 232 | | | | 8.535 | | 232 |
| 53MN 233 | | | | 8.539 | | 233 |
| 53MN 234 | | | | 8.545 | | 234 |
| 53MN 235 | | | | 8.548 | | 235 |
| 53MN 236 | | | | 8.556 | | 236 |
| 53MN 237 | | | | 8.559 | (3/2-,5/2-) | 237 |
| 53MN 238 | | | | 8.563 | (3/2-,5/2,7/2-) | 238 |
| 53MN 239 | | | | 8.573 | | 239 |
| 53MN 240 | | | | 8.579 | | 240 |
| ----- | | | | | | |
| 53MN 241 | | | | 8.593 | | 241 |
| 53MN 242 | | | | 8.596 | | 242 |
| 53MN 243 | | | | 8.608 | (3/2-,5/2-) | 243 |
| 53MN 244 | | | | 8.608 | | 244 |
| 53MN 245 | | | | 8.611 | (3/2-,5/2,7/2-) | 245 |
| 53MN 246 | | | | 8.623 | | 246 |
| 53MN 247 | | | | 8.632 | | 247 |
| 53MN 248 | | | | 8.637 | | 248 |
| 53MN 249 | | | | 8.644 | | 249 |
| 53MN 250 | | | | 8.648 | | 250 |
| ----- | | | | | | |
| 53MN 251 | | | | 8.653 | (3/2-) | 251 |
| 53MN 252 | | | | 8.663 | | 252 |
| 53MN 253 | | | | 8.668 | | 253 |
| 53MN 254 | | | | 8.673 | (3/2-) | 254 |
| 53MN 255 | | | | 8.683 | | 255 |
| 53MN 256 | | | | 8.691 | (3/2-,5/2,7/2-) | 256 |
| 53MN 257 | | | | 8.703 | | 257 |
| 53MN 258 | | | | 8.706 | | 258 |
| 53MN 259 | | | | 8.712 | (3/2-,5/2,7/2-) | 259 |
| 53MN 260 | | | | 8.719 | | 260 |
| ----- | | | | | | |
| 53MN 261 | | | | 8.728 | | 261 |
| 53MN 262 | | 8.731 | 5/2- | | | 262 |
| 53MN 263 | | | | 8.744 | (3/2-,5/2,7/2-) | 263 |

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|----------|-------|------|-------|-------------------|-----|
| 53MN 264 | | | 8.753 | | 264 |
| 53MN 265 | | | 8.756 | | 265 |
| 53MN 266 | | | 8.761 | | 266 |
| 53MN 267 | | | 8.768 | | 267 |
| 53MN 268 | | | 8.784 | (3/2-, 5/2, 7/2-) | 268 |
| 53MN 269 | | | 8.790 | | 269 |
| 53MN 270 | | | 8.796 | | 270 |
| ----- | | | | | |
| 53MN 271 | | | 8.803 | | 271 |
| 53MN 272 | | | 8.808 | (3/2-, 5/2, 7/2-) | 272 |
| 53MN 273 | | | 8.813 | | 273 |
| 53MN 274 | | | 8.816 | 5/2 | 274 |
| 53MN 275 | | | 8.821 | | 275 |
| 53MN 276 | | | 8.824 | | 276 |
| 53MN 277 | | | 8.827 | | 277 |
| 53MN 278 | | | 8.834 | | 278 |
| 53MN 279 | | | 8.837 | 5/2 | 279 |
| 53MN 280 | | | 8.845 | (3/2-, 5/2+) | 280 |
| ----- | | | | | |
| 53MN 281 | | | 8.851 | | 281 |
| 53MN 282 | | | 8.860 | (3/2-, 5/2+) | 282 |
| 53MN 283 | | | 8.864 | 5/2 | 283 |
| 53MN 284 | | | 8.868 | | 284 |
| 53MN 285 | | | 8.879 | 5/2 | 285 |
| 53MN 286 | | | 8.889 | | 286 |
| 53MN 287 | | | 8.894 | | 287 |
| 53MN 288 | | | 8.898 | | 288 |
| 53MN 289 | | | 8.901 | (3/2-, 5/2, 7/2-) | 289 |
| 53MN 290 | | | 8.912 | | 290 |
| ----- | | | | | |
| 53MN 291 | | | 8.918 | (3/2-, 5/2+) | 291 |
| 53MN 292 | | | 8.922 | (3/2-, 5/2, 7/2-) | 292 |
| 53MN 293 | 8.923 | 7/2- | | | 293 |
| 53MN 294 | | | 8.924 | 5/2-, 7/2- | 294 |
| 53MN 295 | 8.936 | 5/2- | | | 295 |
| 53MN 296 | | | 8.941 | | 296 |
| 53MN 297 | | | 8.945 | 5/2, 7/2- | 297 |
| 53MN 298 | | | 8.953 | (5/2-, 7/2-) | 298 |
| 53MN 299 | | | 8.960 | | 299 |
| 53MN 300 | | | 8.966 | | 300 |
| ----- | | | | | |
| 53MN 301 | | | 8.972 | (3/2-, 5/2, 7/2-) | 301 |
| 53MN 302 | | | 8.977 | (3/2-, 5/2, 7/2-) | 302 |
| 53MN 303 | | | 8.981 | (3/2+, 5/2+) | 303 |
| 53MN 304 | | | 8.985 | | 304 |
| 53MN 305 | | | 8.993 | 3/2-, 5/2 | 305 |
| 53MN 306 | | | 8.996 | (5/2-, 7/2) | 306 |
| 53MN 307 | | | 9.003 | (3/2-, 5/2, 7/2-) | 307 |
| 53MN 308 | | | 9.012 | | 308 |
| 53MN 309 | | | 9.016 | | 309 |

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|----------|-------|----------|-------|-------|-------------------|-----|
| 53MN 310 | | | | 9.021 | | 310 |
| ----- | | | | | | |
| 53MN 311 | | | | 9.024 | | 311 |
| 53MN 312 | | | | 9.027 | (3/2-, 5/2, 7/2-) | 312 |
| 53MN 313 | | | | 9.035 | | 313 |
| 53MN 314 | | | | 9.041 | | 314 |
| 53MN 315 | | | | 9.044 | | 315 |
| 53MN 316 | | | | 9.050 | | 316 |
| 53MN 317 | | | | 9.053 | | 317 |
| 53MN 318 | | | | 9.064 | | 318 |
| 53MN 319 | | | | 9.067 | | 319 |
| 53MN 320 | | | 9.071 | 3/2- | | 320 |
| ----- | | | | | | |
| 53MN 321 | | | | 9.082 | | 321 |
| 53MN 322 | | | | 9.091 | | 322 |
| 53MN 323 | | | | 9.096 | 3/2-, 5/2- | 323 |
| 53MN 324 | | | | 9.100 | | 324 |
| 53MN 325 | 9.108 | 5/2+ | | | | 325 |
| 53MN 326 | | | | 9.115 | 3/2-, 5/2, 7/2- | 326 |
| 53MN 327 | | | | 9.121 | 3/2-, 5/2- | 327 |
| 53MN 328 | | | | 9.127 | | 328 |
| 53MN 329 | | | | 9.139 | 3/2-, 5/2+ | 329 |
| 53MN 330 | | | | 9.149 | | 330 |
| ----- | | | | | | |
| 53MN 331 | | | | 9.153 | 3/2-, 5/2+ | 331 |
| ----- | | | | | | |
| S-alpha= | 9.153 | (0.001) | | | | |
| ----- | | | | | | |
| 53MN 332 | | | | 9.156 | | 332 |
| 53MN 333 | | | | 9.159 | | 333 |
| 53MN 334 | | | | 9.169 | 3/2-, 5/2, 7/2- | 334 |
| 53MN 335 | | | | 9.174 | | 335 |
| 53MN 336 | | | 9.179 | 5/2- | | 336 |
| 53MN 337 | | | | 9.182 | | 337 |
| 53MN 338 | | | | 9.190 | 5/2 | 338 |
| 53MN 339 | 9.193 | 9/2+ | | | | 339 |
| 53MN 340 | | | | 9.197 | 3/2-, 5/2, 7/2- | 340 |
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| 53MN 341 | | | | 9.200 | 3/2-, 5/2, 7/2- | 341 |
| 53MN 342 | 9.204 | 9/2+ | | | | 342 |
| 53MN 343 | | | 9.208 | 5/2- | | 343 |
| 53MN 344 | | | | 9.215 | (3/2+, 5/2+) | 344 |
| 53MN 345 | | | | 9.219 | 3/2-, 5/2-, 7/2- | 345 |
| 53MN 346 | | | | 9.225 | 3/2-, 5/2, 7/2- | 346 |
| 53MN 347 | | | 9.230 | 5/2- | | 347 |
| 53MN 348 | | | | 9.233 | | 348 |
| 53MN 349 | | | | 9.241 | 3/2-, 5/2, 7/2- | 349 |
| 53MN 350 | | | | 9.245 | 3/2-, 5/2- | 350 |
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| 53MN 351 | 9.250 | 5/2+ | | | | 351 |
| 53MN 352 | | | | 9.263 | | 352 |
| 53MN 353 | | | | 9.268 | | 353 |

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|----------|--|--------|--------|------|--|--------|-----------------|
| 53MN 354 | | | 9.278 | 5/2- | | | 354 |
| 53MN 355 | | | 9.283 | 3/2- | | | 355 |
| 53MN 356 | | | | | | 9.290 | 356 |
| 53MN 357 | | | 9.296 | 3/2- | | | 357 |
| 53MN 358 | | | | | | 9.303 | 358 |
| 53MN 359 | | | 9.307 | 7/2- | | | 359 |
| 53MN 360 | | | 9.314 | 5/2- | | | 360 |
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| 53MN 361 | | | | | | 9.319 | 361 |
| 53MN 362 | | | | | | 9.327 | 362 |
| 53MN 363 | | | | | | 9.333 | 363 |
| 53MN 364 | | | 9.343 | 3/2- | | | 364 |
| 53MN 365 | | | | | | 9.346 | 3/2-, 5/2, 7/2- |
| 53MN 366 | | | | | | 9.352 | 366 |
| 53MN 367 | | | | | | 9.361 | 3/2-, 5/2, 7/2- |
| 53MN 368 | | | | | | 9.365 | 368 |
| 53MN 369 | | | | | | 9.371 | 369 |
| 53MN 370 | | | | | | 9.378 | 370 |
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| 53MN 371 | | | | | | 9.380 | 371 |
| 53MN 372 | | | | | | 9.389 | 372 |
| 53MN 373 | | | | | | 9.399 | 373 |
| 53MN 374 | | | | | | 9.403 | 374 |
| 53MN 375 | | | | | | 9.406 | 375 |
| 53MN 376 | | | | | | 9.411 | 376 |
| 53MN 377 | | | | | | 9.416 | (3/2-) |
| 53MN 378 | | | | | | 9.425 | 1/2-, 3/2- |
| 53MN 379 | | | | | | 9.585 | (1/2-, 3/2-) |
| 53MN 380 | | | | | | 9.654 | 5/2-, 7/2- |
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| 53MN 381 | | | | | | 9.837 | (9/2)+ |
| 53MN 382 | | | | | | 9.938 | (5/2-, 7/2-) |
| 53MN 383 | | | | | | 10.050 | |
| 53MN 384 | | | | | | 10.108 | (3/2+, 5/2+) |
| 53MN 385 | | | | | | 10.174 | (3/2)- |
| 53MN 386 | | | | | | 10.190 | (3/2+, 5/2+) |
| 53MN 387 | | | | | | 10.320 | (3/2+, 5/2+) |
| 53MN 388 | | | | | | 10.475 | (3/2+, 5/2+) |
| 53MN 389 | | | 10.552 | 1/2- | | | 389 |
| 53MN 390 | | | 10.557 | 1/2- | | | 390 |
| ----- | | | | | | | |
| 53MN 391 | | | 10.570 | 1/2- | | | 391 |
| 53MN 392 | | | | | | 10.584 | |
| 53MN 393 | | 10.597 | 9/2+ | | | | 393 |
| 53MN 394 | | | | | | 10.607 | 7/2+, 9/2+ |
| 53MN 395 | | 10.612 | 9/2+ | | | | 395 |
| 53MN 396 | | 10.620 | 9/2+ | | | | 396 |
| 53MN 397 | | | | | | 10.627 | |
| 53MN 398 | | 10.638 | 9/2+ | | | | 398 |
| 53MN 399 | | 10.645 | 9/2+ | | | | 399 |

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|----------|---|--------|---|--------|--|-----|
| 53MN 400 | | | | 10.651 | | 400 |
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| 53MN 401 | | 10.657 | | 9/2+ | | 401 |
| 53MN 402 | | 10.662 | | 9/2+ | | 402 |
| 53MN 403 | | 10.668 | | 9/2+ | | 403 |
| 53MN 404 | | | | | | 404 |
| 53MN 405 | | 10.678 | | 9/2+ | | 405 |
| 53MN 406 | | | | | | 406 |
| 53MN 407 | | | | | | 407 |
| 53MN 408 | | | | | | 408 |
| 53MN 409 | | | | | | 409 |
| 53MN 410 | | | | | | 410 |
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| 53MN 411 | | | | | | 411 |
| 53MN 412 | | | | | | 412 |
| 53MN 413 | | | | | | 413 |
| 53MN 414 | | | | | | 414 |
| 53MN 415 | | | | | | 415 |
| 53MN 416 | | | | | | 416 |
| 53MN 417 | | | | | | 417 |
| 53MN 418 | | | | | | 418 |
| 53MN 419 | | | | | | 419 |
| S-n | = | 12.054 | (| 0.002) | | |
| ----- | | | | | | |
| 53MN 420 | | | | 12.130 | | 420 |
| ----- | | | | | | |

S-p = 6.560 (0.001)-----
S-n = 12.054 (0.002)-----
S-2p = 17.064 (0.001)-----
S-2n = 22.589 (0.001)-----
S-alpha= 9.153 (0.001)-----

S+p = -8.853 (0.001)
S+n = -8.939 (0.001)
S+2p = -13.918 (0.001)
S+2n = -19.165 (0.001)
S+alpha = -7.080 (0.001)

gap p = -2.294 (0.001)
gap n = 3.115 (0.002)
gap 2p = 3.146 (0.001)
gap 2n = 3.424 (0.001)
gap alpha = 2.073 (0.001)