

$^{51}\text{Mn}$        $Z = 25$        $N = 26$       adopted link      ENSDF link

Based on ENSDF from Oct 2022, and mass evaluation from 2020

BE = 440.322 ( 0.000) MeV

Qbeta+ = 3.207 ( 0.000) MeV

|         | Energy T | J+   | J-    | J-other           | T1/2             |
|---------|----------|------|-------|-------------------|------------------|
| 51MN 1  |          |      | 0.000 | 5/2-              | 1 46.2 M 1       |
| 51MN 2  |          |      | 0.237 | 7/2-              | 2 14.1 PS 23     |
| 51MN 3  |          |      | 1.140 | 9/2-              | 3 0.25 PS +8-6   |
| 51MN 4  |          |      | 1.488 | 11/2-             | 4 0.50 PS +14-10 |
| 51MN 5  |          |      |       | 1.817 3/2(-)      | 5 0.7 PS GT      |
| 51MN 6  |          |      | 1.825 | 3/2-              | 6 16 FS 4        |
| 51MN 7  |          |      | 1.959 | 1/2-              | 7 0.38 PS 12     |
| 51MN 8  |          |      | 2.140 | 3/2-              | 8 15 FS 4        |
| 51MN 9  |          |      |       | 2.256 (5/2-)      | 9 79 FS +33-26   |
| 51MN 10 | 2.276    | 1/2+ |       |                   | 10 1.2 FS GT     |
| 51MN 11 |          |      | 2.310 | 5/2-              | 11 0.9 PS +6-4   |
| 51MN 12 |          |      |       | 2.416 (7/2)-      | 12 4.2 FS +28-21 |
| 51MN 13 |          |      |       | 2.450 1/2-,3/2-   | 13               |
| 51MN 14 |          |      |       | 2.650 1/2-,3/2-   | 14               |
| 51MN 15 |          |      | 2.702 | 3/2-              | 15 0.5 PS GT     |
| 51MN 16 |          |      | 2.841 | 1/2-              | 16 0.27 PS +13-8 |
| 51MN 17 |          |      | 2.893 | 5/2-              | 17               |
| 51MN 18 |          |      | 2.914 | 3/2-              | 18 21 FS LT      |
| 51MN 19 |          |      | 2.957 | 13/2-             | 19               |
| 51MN 20 | 2.984    | 5/2+ |       |                   | 20               |
| 51MN 21 |          |      |       | 3.030 (7/2)       | 21               |
| 51MN 22 |          |      |       | 3.049 (3/2-)      | 22               |
| 51MN 23 |          |      |       | 3.058 (5/2-,7/2-) | 23               |
| 51MN 24 |          |      |       | 3.092 1/2-,3/2-   | 24               |
| 51MN 25 |          |      |       | 3.131 3/2-,5/2+   | 25               |
| 51MN 26 |          |      | 3.251 | 15/2-             | 26               |
| 51MN 27 |          |      |       | 3.281 (1/2,3/2)   | 27               |
| 51MN 28 |          |      |       | 3.292 5/2-,7/2-   | 28               |
| 51MN 29 |          |      |       | 3.423 (1/2-:7/2-) | 29               |
| 51MN 30 |          |      |       | 3.543 1/2-,3/2-   | 30               |
| 51MN 31 |          |      | 3.554 | 3/2-              | 31               |
| 51MN 32 |          |      |       | 3.658             | 32               |
| 51MN 33 |          |      | 3.681 | 17/2-             | 33 1.76 NS 4     |
| 51MN 34 |          |      |       | 3.694 1/2-,3/2-   | 34               |
| 51MN 35 |          |      |       | 3.730 (7/2)       | 35               |
| 51MN 36 |          |      |       | 3.825 7/2         | 36               |
| 51MN 37 |          |      |       | 3.835 (7/2)       | 37               |

|         |       |         |                |       |               |    |
|---------|-------|---------|----------------|-------|---------------|----|
| 51MN 38 |       |         |                | 3.877 | (3/2,5/2)     | 38 |
| 51MN 39 |       |         |                | 3.893 | 1/2-,3/2-     | 39 |
| 51MN 40 |       |         |                | 3.932 | 3/2,5/2-      | 40 |
| -----   |       |         |                |       |               |    |
| 51MN 41 |       |         |                | 3.956 | (7/2,9/2)     | 41 |
| 51MN 42 |       |         |                | 4.000 |               | 42 |
| 51MN 43 |       |         |                | 4.006 | (3/2-,5/2-)   | 43 |
| 51MN 44 |       |         |                | 4.017 | (1/2,3/2-)    | 44 |
| 51MN 45 |       |         |                | 4.046 |               | 45 |
| 51MN 46 |       |         |                | 4.052 |               | 46 |
| 51MN 47 |       |         |                | 4.091 | (5/2-,7/2-)   | 47 |
| 51MN 48 |       | 4.140   | 19/2-          |       |               | 48 |
| 51MN 49 |       |         |                | 4.153 | (5/2+)        | 49 |
| 51MN 50 |       |         |                | 4.200 | (1/2,3/2)     | 50 |
| -----   |       |         |                |       |               |    |
| 51MN 51 |       |         |                | 4.206 | (5/2)         | 51 |
| 51MN 52 |       |         |                | 4.352 | (1/2-,3/2-)   | 52 |
| 51MN 53 |       | 4.451   | 7/2-           |       |               | 53 |
| 51MN 54 |       |         |                | 4.463 |               | 54 |
| 51MN 55 |       |         |                | 4.488 | (5/2)         | 55 |
| 51MN 56 |       |         |                | 4.493 | 5/2-,7/2-     | 56 |
| 51MN 57 |       |         |                | 4.523 | 1/2-,3/2-     | 57 |
| 51MN 58 |       |         |                | 4.532 |               | 58 |
| 51MN 59 |       |         |                | 4.540 | (3/2,5/2,7/2) | 59 |
| 51MN 60 |       |         |                | 4.601 |               | 60 |
| -----   |       |         |                |       |               |    |
| 51MN 61 |       |         |                | 4.710 |               | 61 |
| 51MN 62 |       |         |                | 4.723 | (1/2,3/2)     | 62 |
| 51MN 63 |       |         |                | 4.731 | (3/2+,5/2+)   | 63 |
| 51MN 64 |       |         |                | 4.739 |               | 64 |
| 51MN 65 |       |         |                | 4.776 |               | 65 |
| 51MN 66 |       |         |                | 4.883 | 1/2,3/2-      | 66 |
| 51MN 67 |       | 4.925   | 1/2-   TO 7/2- |       |               | 67 |
| 51MN 68 |       |         |                | 5.067 | (3/2)         | 68 |
| 51MN 69 |       |         |                | 5.077 | 1/2-,3/2-     | 69 |
| 51MN 70 |       |         |                | 5.133 | 1/2-,3/2-     | 70 |
| -----   |       |         |                |       |               |    |
| 51MN 71 |       |         |                | 5.174 | (1/2,3/2,5/2) | 71 |
| 51MN 72 |       |         |                | 5.188 | (3/2+,5/2+)   | 72 |
| 51MN 73 |       |         |                | 5.203 |               | 73 |
| 51MN 74 |       |         |                | 5.212 |               | 74 |
| 51MN 75 |       |         |                | 5.230 |               | 75 |
| 51MN 76 |       |         |                | 5.259 | (17/2,19/2)   | 76 |
| -----   |       |         |                |       |               |    |
| S-p =   | 5.271 | (0.000) |                |       |               |    |
| 51MN 77 |       |         |                | 5.454 | 1/2-,3/2-     | 77 |
| 51MN 78 |       | 5.458   | 19/2-          |       |               | 78 |
| 51MN 79 |       |         |                | 5.506 |               | 79 |
| 51MN 80 |       |         |                | 5.517 | (1/2-,3/2-)   | 80 |
| -----   |       |         |                |       |               |    |
| 51MN 81 |       |         |                | 5.585 |               | 81 |

|          |  |       |       |       |             |     |
|----------|--|-------|-------|-------|-------------|-----|
| 51MN 82  |  |       |       | 5.596 | (1/2-,3/2-) | 82  |
| 51MN 83  |  | 5.640 | 21/2- |       |             | 83  |
| 51MN 84  |  |       |       | 5.692 | (1/2-,3/2-) | 84  |
| 51MN 85  |  |       |       | 5.729 |             | 85  |
| 51MN 86  |  |       |       | 5.787 |             | 86  |
| 51MN 87  |  |       |       | 5.867 |             | 87  |
| 51MN 88  |  |       |       | 5.899 |             | 88  |
| 51MN 89  |  |       |       | 5.944 |             | 89  |
| 51MN 90  |  |       |       | 5.975 |             | 90  |
| -----    |  |       |       |       |             |     |
| 51MN 91  |  |       |       | 6.012 |             | 91  |
| 51MN 92  |  |       |       | 6.047 |             | 92  |
| 51MN 93  |  |       |       | 6.072 |             | 93  |
| 51MN 94  |  |       |       | 6.118 |             | 94  |
| 51MN 95  |  |       |       | 6.299 |             | 95  |
| 51MN 96  |  | 6.309 | 3/2-  |       |             | 96  |
| 51MN 97  |  |       |       | 6.321 |             | 97  |
| 51MN 98  |  |       |       | 6.359 |             | 98  |
| 51MN 99  |  |       |       | 6.372 |             | 99  |
| 51MN 100 |  |       |       | 6.412 |             | 100 |
| -----    |  |       |       |       |             |     |
| 51MN 101 |  | 6.451 | 5/2-  |       |             | 101 |
| 51MN 102 |  |       |       | 6.466 |             | 102 |
| 51MN 103 |  | 6.471 | 23/2- |       |             | 103 |
| 51MN 104 |  |       |       | 6.682 |             | 104 |
| 51MN 105 |  | 6.694 | 5/2-  |       |             | 105 |
| 51MN 106 |  |       |       | 6.702 |             | 106 |
| 51MN 107 |  |       |       | 6.723 |             | 107 |
| 51MN 108 |  |       |       | 6.742 |             | 108 |
| 51MN 109 |  | 6.754 | 5/2-  |       |             | 109 |
| 51MN 110 |  |       |       | 6.786 |             | 110 |
| -----    |  |       |       |       |             |     |
| 51MN 111 |  |       |       | 6.800 |             | 111 |
| 51MN 112 |  |       |       | 6.803 |             | 112 |
| 51MN 113 |  |       |       | 6.820 |             | 113 |
| 51MN 114 |  | 6.823 | 21/2- |       |             | 114 |
| 51MN 115 |  |       |       | 6.840 |             | 115 |
| 51MN 116 |  |       |       | 6.849 |             | 116 |
| 51MN 117 |  |       |       | 6.916 |             | 117 |
| 51MN 118 |  |       |       | 6.927 |             | 118 |
| 51MN 119 |  | 7.034 | 3/2-  |       |             | 119 |
| 51MN 120 |  |       |       | 7.045 | 1/2         | 120 |
| -----    |  |       |       |       |             |     |
| 51MN 121 |  | 7.065 | 3/2-  |       |             | 121 |
| 51MN 122 |  |       |       | 7.106 | 5/2,7/2-    | 122 |
| 51MN 123 |  |       |       | 7.129 | 1/2         | 123 |
| 51MN 124 |  | 7.141 | 5/2-  |       |             | 124 |
| 51MN 125 |  | 7.146 | 3/2-  |       |             | 125 |
| 51MN 126 |  | 7.162 | 1/2-  |       |             | 126 |
| 51MN 127 |  | 7.169 | 1/2-  |       |             | 127 |

|          |  |       |      |       |       |       |       |         |                |     |
|----------|--|-------|------|-------|-------|-------|-------|---------|----------------|-----|
| 51MN 128 |  |       |      | 7.170 | 5/2-  |       |       |         | 128            |     |
| 51MN 129 |  |       |      |       |       |       | 7.175 | 5/2     | 129            |     |
| 51MN 130 |  |       |      |       |       |       | 7.176 | (27/2-) | 130 69.8 PS 22 |     |
| -----    |  |       |      |       |       |       |       |         |                |     |
| 51MN 131 |  | 7.176 | 5/2+ |       |       |       |       |         | 131            |     |
| 51MN 132 |  |       |      |       | 7.190 | 3/2-  |       |         | 132            |     |
| 51MN 133 |  |       |      |       |       |       |       | 7.210   | (5/2)          | 133 |
| 51MN 134 |  |       |      |       |       |       |       | 7.213   | (1/2,3/2)      | 134 |
| 51MN 135 |  |       |      |       |       |       |       | 7.222   |                | 135 |
| 51MN 136 |  |       |      |       |       |       |       | 7.240   | 5/2(+)         | 136 |
| 51MN 137 |  |       |      |       | 7.261 | 5/2-  |       |         |                | 137 |
| 51MN 138 |  |       |      |       | 7.262 | 3/2-  |       |         |                | 138 |
| 51MN 139 |  |       |      |       |       |       |       | 7.273   | 5/2            | 139 |
| 51MN 140 |  |       |      |       | 7.274 | 3/2-  |       |         |                | 140 |
| -----    |  |       |      |       |       |       |       |         |                |     |
| 51MN 141 |  |       |      |       | 7.296 | 3/2-  |       |         |                | 141 |
| 51MN 142 |  |       |      |       |       |       |       | 7.297   | (15/2+)        | 142 |
| 51MN 143 |  | 7.310 | 5/2+ |       |       |       |       |         |                | 143 |
| 51MN 144 |  |       |      |       | 7.314 | 3/2-  |       |         |                | 144 |
| 51MN 145 |  |       |      |       | 7.339 | 3/2-  |       |         |                | 145 |
| 51MN 146 |  | 7.342 | 5/2+ |       |       |       |       |         |                | 146 |
| 51MN 147 |  |       |      |       |       |       |       | 7.343   | 3/2-,5/2-      | 147 |
| 51MN 148 |  |       |      |       | 7.357 | 5/2-  |       |         |                | 148 |
| 51MN 149 |  |       |      |       |       |       |       | 7.370   | 3/2+,5/2-      | 149 |
| 51MN 150 |  |       |      |       | 7.371 | 3/2-  |       |         |                | 150 |
| -----    |  |       |      |       |       |       |       |         |                |     |
| 51MN 151 |  |       |      |       |       |       |       | 7.395   | 3/2-,5/2-      | 151 |
| 51MN 152 |  |       |      |       |       |       |       | 7.415   | 3/2+,5/2+      | 152 |
| 51MN 153 |  |       |      |       |       |       |       | 7.447   | 3/2-,5/2-      | 153 |
| 51MN 154 |  |       |      |       | 7.450 | 3/2-  |       |         |                | 154 |
| 51MN 155 |  | 7.459 | 5/2+ |       |       |       |       |         |                | 155 |
| 51MN 156 |  |       |      |       |       |       |       | 7.463   |                | 156 |
| 51MN 157 |  |       |      |       | 7.467 | 1/2-  |       |         |                | 157 |
| 51MN 158 |  |       |      |       |       |       |       | 7.501   | (21/2-,23/2-)  | 158 |
| 51MN 159 |  |       |      |       | 7.514 | 5/2-  |       |         |                | 159 |
| 51MN 160 |  |       |      |       |       |       |       | 7.529   | 3/2-,5/2-      | 160 |
| -----    |  |       |      |       |       |       |       |         |                |     |
| 51MN 161 |  |       |      |       |       |       |       | 7.546   | 5/2            | 161 |
| 51MN 162 |  |       |      |       | 7.550 | 1/2-  |       |         |                | 162 |
| 51MN 163 |  |       |      |       |       |       |       | 7.560   | 3/2-,5/2-      | 163 |
| 51MN 164 |  |       |      |       |       |       |       | 7.572   |                | 164 |
| 51MN 165 |  |       |      |       |       |       |       | 7.587   | (3/2-)         | 165 |
| 51MN 166 |  |       |      |       |       |       |       | 7.599   |                | 166 |
| 51MN 167 |  |       |      |       |       |       |       | 7.618   | 1/2            | 167 |
| 51MN 168 |  | 7.621 | 7/2+ |       |       |       |       |         |                | 168 |
| 51MN 169 |  |       |      |       | 7.631 | 5/2-  |       |         |                | 169 |
| 51MN 170 |  |       |      |       |       |       |       | 7.635   |                | 170 |
| -----    |  |       |      |       |       |       |       |         |                |     |
| 51MN 171 |  |       |      |       |       |       |       | 7.643   |                | 171 |
| 51MN 172 |  |       |      |       | 7.667 | 23/2- |       |         |                | 172 |

|          |  |       |      |  |       |       |           |               |     |
|----------|--|-------|------|--|-------|-------|-----------|---------------|-----|
| 51MN 173 |  |       |      |  |       | 7.669 | (5/2,7/2) | 173           |     |
| 51MN 174 |  |       |      |  |       | 7.683 |           | 174           |     |
| 51MN 175 |  | 7.699 | 5/2+ |  |       |       |           | 175           |     |
| 51MN 176 |  |       |      |  | 7.715 | 3/2-  |           | 176           |     |
| 51MN 177 |  |       |      |  | 7.718 | 3/2-  |           | 177           |     |
| 51MN 178 |  |       |      |  | 7.729 | 3/2-  |           | 178           |     |
| 51MN 179 |  |       |      |  |       |       | 1/2       | 179           |     |
| 51MN 180 |  |       |      |  | 7.786 | 5/2-  |           | 180           |     |
| -----    |  |       |      |  |       |       |           |               |     |
| 51MN 181 |  |       |      |  | 7.791 | 5/2-  |           | 181           |     |
| 51MN 182 |  | 7.798 | 1/2+ |  |       |       |           | 182           |     |
| 51MN 183 |  |       |      |  |       |       | 7.844     | 183           |     |
| 51MN 184 |  |       |      |  | 7.849 | 3/2-  |           | 184           |     |
| 51MN 185 |  |       |      |  |       |       | 7.865     | (17/2+)       | 185 |
| 51MN 186 |  |       |      |  |       |       | 7.887     |               | 186 |
| 51MN 187 |  |       |      |  | 7.892 | 25/2- |           | 187           |     |
| 51MN 188 |  |       |      |  |       |       | 7.894     |               | 188 |
| 51MN 189 |  |       |      |  |       |       | 7.914     |               | 189 |
| 51MN 190 |  |       |      |  |       |       | 7.933     | 3/2-,5/2-,7/2 | 190 |
| -----    |  |       |      |  |       |       |           |               |     |
| 51MN 191 |  |       |      |  | 7.943 | 3/2-  |           | 191           |     |
| 51MN 192 |  |       |      |  |       |       | 7.968     |               | 192 |
| 51MN 193 |  |       |      |  |       |       | 8.014     | 9/2           | 193 |
| 51MN 194 |  |       |      |  |       |       | 8.023     |               | 194 |
| 51MN 195 |  |       |      |  | 8.045 | 3/2-  |           |               | 195 |
| 51MN 196 |  |       |      |  |       |       | 8.064     | 3/2           | 196 |
| 51MN 197 |  |       |      |  |       |       | 8.085     | 21/2-,23/2    | 197 |
| 51MN 198 |  |       |      |  |       |       | 8.101     |               | 198 |
| 51MN 199 |  |       |      |  | 8.143 | 7/2-  |           |               | 199 |
| 51MN 200 |  |       |      |  |       |       | 8.147     | 3/2-,5/2-,7/2 | 200 |
| -----    |  |       |      |  |       |       |           |               |     |
| 51MN 201 |  |       |      |  |       |       | 8.169     | 3/2-,5/2      | 201 |
| 51MN 202 |  |       |      |  |       |       | 8.175     | 3/2,5/2-      | 202 |
| 51MN 203 |  |       |      |  |       |       | 8.186     |               | 203 |
| 51MN 204 |  |       |      |  |       |       | 8.199     | (3/2-)        | 204 |
| 51MN 205 |  |       |      |  |       |       | 8.216     | 3/2-,5/2-     | 205 |
| 51MN 206 |  |       |      |  |       |       | 8.256     |               | 206 |
| 51MN 207 |  |       |      |  |       |       | 8.260     | 5/2,7/2-,9/2  | 207 |
| 51MN 208 |  |       |      |  |       |       | 8.266     |               | 208 |
| 51MN 209 |  |       |      |  | 8.269 | 5/2-  |           |               | 209 |
| 51MN 210 |  | 8.282 | 5/2+ |  |       |       |           |               | 210 |
| -----    |  |       |      |  |       |       |           |               |     |
| 51MN 211 |  | 8.307 | 5/2+ |  |       |       |           |               | 211 |
| 51MN 212 |  | 8.336 | 5/2+ |  |       |       |           |               | 212 |
| 51MN 213 |  |       |      |  |       |       | 8.340     | (5/2+)        | 213 |
| 51MN 214 |  | 8.352 | 5/2+ |  |       |       |           |               | 214 |
| 51MN 215 |  | 8.358 | 5/2+ |  |       |       |           |               | 215 |
| 51MN 216 |  |       |      |  |       |       | 8.381     |               | 216 |
| 51MN 217 |  | 8.389 | 3/2+ |  |       |       |           |               | 217 |
| 51MN 218 |  |       |      |  | 8.391 | 5/2-  |           |               | 218 |

|           |   |         |          |  |       |       |             |  |         |     |
|-----------|---|---------|----------|--|-------|-------|-------------|--|---------|-----|
| 51MN 219  |   |         |          |  |       | 8.400 |             |  |         | 219 |
| 51MN 220  |   |         |          |  |       | 8.403 | 1/2         |  |         | 220 |
| -----     |   |         |          |  |       |       |             |  |         |     |
| 51MN 221  |   | 8.408   | 5/2+     |  |       |       |             |  |         | 221 |
| 51MN 222  |   |         |          |  |       | 8.415 | (19/2+)     |  |         | 222 |
| 51MN 223  |   |         |          |  | 8.425 | 23/2- |             |  |         | 223 |
| 51MN 224  |   | 8.453   | 9/2+     |  |       |       |             |  |         | 224 |
| 51MN 225  |   | 8.465   | 9/2+     |  |       |       |             |  |         | 225 |
| 51MN 226  |   | 8.473   | 9/2+     |  |       |       |             |  |         | 226 |
| 51MN 227  |   |         |          |  |       | 8.473 |             |  |         | 227 |
| 51MN 228  |   | 8.491   | 5/2+     |  |       |       |             |  |         | 228 |
| 51MN 229  |   | 8.492   | 5/2+     |  |       |       |             |  |         | 229 |
| 51MN 230  |   |         |          |  |       | 8.499 |             |  |         | 230 |
| -----     |   |         |          |  |       |       |             |  |         |     |
| 51MN 231  |   |         |          |  |       | 8.556 |             |  |         | 231 |
| 51MN 232  |   |         |          |  |       | 8.556 |             |  |         | 232 |
| S-alpha=  |   | 8.661   | ( 0.000) |  |       |       |             |  |         |     |
| -----     |   |         |          |  |       |       |             |  |         |     |
| 51MN 233  |   | 8.749   | 1/2+     |  |       |       |             |  |         | 233 |
| 51MN 234  |   |         |          |  | 8.893 | 1/2-  |             |  |         | 234 |
| 51MN 235  |   | 8.915   | 1/2+     |  |       |       |             |  |         | 235 |
| 51MN 236  |   |         |          |  | 8.973 | 25/2- |             |  |         | 236 |
| 51MN 237  |   |         |          |  |       | 9.165 | (21/2+)     |  |         | 237 |
| 51MN 238  |   |         |          |  | 9.186 | 3/2-  |             |  |         | 238 |
| 51MN 239  |   |         |          |  |       | 9.471 | 25/2-, 27/2 |  | 0.69 PS | GT  |
| 51MN 240  |   |         |          |  | 9.515 | 1/2-  |             |  |         | 240 |
| -----     |   |         |          |  |       |       |             |  |         |     |
| 51MN 241  |   |         |          |  | 9.516 | 1/2-  |             |  |         | 241 |
| 51MN 242  |   |         |          |  | 9.600 | 25/2- |             |  |         | 242 |
| 51MN 243  |   |         |          |  | 9.677 | 25/2- |             |  |         | 243 |
| 51MN 244  |   |         |          |  | 9.920 | 25/2- |             |  |         | 244 |
| 51MN 245  |   |         |          |  |       | 9.979 | 23/2(+)     |  |         | 245 |
| -----     |   |         |          |  |       |       |             |  |         |     |
| S-p       | = | 5.271   | ( 0.000) |  |       |       |             |  |         |     |
| S-n       | = | 13.688  | ( 0.000) |  |       |       |             |  |         |     |
| S-2p      | = | 14.859  | ( 0.001) |  |       |       |             |  |         |     |
| S-2n      | = | 26.766  | ( 0.002) |  |       |       |             |  |         |     |
| S-alpha=  |   | 8.661   | ( 0.000) |  |       |       |             |  |         |     |
| -----     |   |         |          |  |       |       |             |  |         |     |
| S+p       | = | -7.378  | ( 0.000) |  |       |       |             |  |         |     |
| S+n       | = | -10.540 | ( 0.000) |  |       |       |             |  |         |     |
| S+2p      | = | -8.994  | ( 0.002) |  |       |       |             |  |         |     |
| S+2n      | = | -22.590 | ( 0.000) |  |       |       |             |  |         |     |
| S+alpha   | = | -8.212  | ( 0.001) |  |       |       |             |  |         |     |
| -----     |   |         |          |  |       |       |             |  |         |     |
| gap p     | = | -2.107  | ( 0.000) |  |       |       |             |  |         |     |
| gap n     | = | 3.148   | ( 0.000) |  |       |       |             |  |         |     |
| gap 2p    | = | 5.865   | ( 0.002) |  |       |       |             |  |         |     |
| gap 2n    | = | 4.176   | ( 0.002) |  |       |       |             |  |         |     |
| gap alpha | = | 0.449   | ( 0.001) |  |       |       |             |  |         |     |