

| Messier Catalogue |      |        |       |       |       |        |        |                                                                                         | Marathon Planning |       |       |         |                         | Marathon on |         |       | 20.03.2004 |         | $\lambda, \phi, T$ | -9,0°  | 50,0° | 2.453.084,5 |         |
|-------------------|------|--------|-------|-------|-------|--------|--------|-----------------------------------------------------------------------------------------|-------------------|-------|-------|---------|-------------------------|-------------|---------|-------|------------|---------|--------------------|--------|-------|-------------|---------|
| Mess.             | Type | Con-   | Rekt. | Dekl. | Size  | Mag-   | Dist.  | Description accord. to Karkoschka                                                       |                   | Rise  | Set   | Culmin. | Classification          | best        | Observ. | Time  | T after    | Height  | Azimuth            | Star-  | seen? |             |         |
| No.               |      | stell. | [ ° ] | [ ° ] | [ ' ] | nitude | [LYrs] | "Atlas für Himmelsbeobachter"                                                           | Pa.               | UT    | UT    | UT      | of visibility           | time        | index   | UT    | Start      | ab. Hor | 180:South          | time   | y/n   | at time     | Remarks |
| Sun               | -    |        | 359,7 | -0,1  |       |        | 0      | -                                                                                       | -                 | 5:28  | 17:31 | 11:29   | Sunset                  | 17:31       | (P0)    | 17:31 | 0:00       | -0,5°   | 270,4°             | 90,4°  | -     |             |         |
| Sun               | -    |        | 359,7 | -0,1  |       |        | 0      | -                                                                                       | -                 | 4:15  | 18:43 | 11:29   | twilight ends           | 18:43       | (P0)    | 18:43 | 1:12       | -12,0°  | 284,5°             | 108,5° | -     |             |         |
| Sun               | -    |        | 359,7 | -0,1  |       |        | 0      | -                                                                                       | -                 | 3:46  | 19:12 | 11:29   | end of astron. twilight | 19:12       | (P0)    | 19:12 | 1:41       | -16,5°  | 290,5°             | 115,8° | -     |             |         |
| 45                | C    | Tau    | 56,7  | 24,1  | 100   | 1,5    | 4,0E+2 | Plejades, Seven Sisters: weak reflection nebular in very dark sky                       | E3                | 8:05  | 0:20  | 16:16   | in evening sky          | 19:12       | 1       | 19:12 | 1:41       | 37,9°   | 263,0°             | 115,8° |       |             |         |
| 110               | X    | And    | 10,1  | 41,7  | 17,4  | 8      | 2,8E+6 | accompanying galaxy of Andromeda, asymmetrical shape                                    | N0                | 1:08  | 1:08  | 13:10   | in evening sky          | 19:12       | 2       | 19:16 | 1:45       | 13,6°   | 320,9°             | 134,9° |       |             |         |
| 31                | X    | And    | 10,7  | 41,3  | 178   | 3,5    | 2,8E+6 | Andromeda galaxy: core rather bright, dust-lanes w' of core, spiral arms weakly         | N0                | 1:11  | 1:11  | 13:13   | in evening sky          | 19:12       | 3       | 19:18 | 1:47       | 21,6°   | 309,3°             | 117,3° |       |             |         |
| 32                | X    | And    | 10,7  | 40,9  | 7,6   | 8,2    | 2,8E+6 | accompanying galaxie of Andromeda, star-spaped with binoculars                          | N0                | 1:11  | 1:11  | 13:13   | in evening sky          | 19:12       | 4       | 19:20 | 1:49       | 21,0°   | 309,3°             | 117,8° |       |             |         |
| 74                | X    | Psc    | 24,2  | 15,8  | 10,2  | 9,2    | 5,0E+7 | very difficult in lightpolluted sky, smallest magnification                             | E1                | 6:45  | 21:24 | 14:07   | in evening sky          | 19:12       | 5       | 19:24 | 1:53       | 9,1°    | 283,7°             | 118,8° |       |             |         |
| 77                | X    | Cet    | 40,7  | 0,0   | 6,9   | 8,8    | 7,0E+7 | Seyfert Galaxy, active bright core using high magnification , star-shaped in binoculars | E0                | 9:13  | 21:12 | 15:13   | in evening sky          | 19:12       | 6       | 19:26 | 1:55       | 7,3°    | 261,2°             | 119,3° |       |             |         |
| 33                | X    | Tri    | 23,5  | 30,7  | 62    | 5,7    | 3,0E+6 | Triangulum nebela: lowest magnification and very dark sky                               | N0                | 5:01  | 23:03 | 14:04   | in evening sky          | 19:12       | 7       | 19:30 | 1:59       | 19,0°   | 295,5°             | 120,3° |       |             |         |
| 79                | G    | Lep    | 81,1  | -24,5 | 8,7   | 8      | 4,0E+4 | very difficult to resolve (far our of milky way plane)                                  | E4                | 14:06 | 21:41 | 17:54   | in evening sky          | 19:12       | 8       | 19:34 | 2:03       | 7,4°    | 216,3°             | 121,3° |       |             |         |
| 42                | N    | Ori    | 83,8  | -5,4  | 66    | 4      | 1,4E+3 | Orion nebula: prime example of gasous nebulars, imbedded stars                          | E4                | 12:31 | 23:38 | 18:04   | in evening sky          | 19:12       | 9       | 19:38 | 2:07       | 25,4°   | 223,3°             | 122,3° |       |             |         |
| 43                | N    | Ori    | 83,9  | -5,3  | 20    | 9      | 1,4E+3 | northern part of Orion nebula, separated by a dark dust cloud                           | E4                | 12:31 | 23:39 | 18:05   | in evening sky          | 19:12       | 10      | 19:40 | 2:09       | 25,3°   | 223,8°             | 122,8° |       |             |         |
| 78                | N    | Ori    | 86,7  | 0,1   | 8     | 8      | 1,2E+3 | brightest reflection nebular, a bigger telescope shows dark dusty structures            | E5                | 12:17 | 0:12  | 18:16   | in evening sky          | 19:12       | 11      | 19:42 | 2:11       | 31,1°   | 224,2°             | 123,3° |       |             |         |
| 34                | O    | Per    | 40,5  | 42,8  | 35    | 5,2    | 1,5E+3 | beautiful with binoculars, lowest magnification with telescope                          | N4                | 3:10  | 3:10  | 15:12   | in evening sky          | 19:12       | 12      | 19:46 | 2:15       | 34,8°   | 297,3°             | 124,3° |       |             |         |
| 52                | O    | Cas    | 351,0 | 61,6  | 13    | 6,9    | 5,0E+3 | nebulous figure with binoculars, many small stars in telescope                          | N22               | 23:56 | 23:56 | 11:50   | in morning sky          | 19:12       | 13      | 19:50 | 2:19       | 23,8°   | 346,1°             | 143,4° |       |             |         |
| 103               | O    | Cas    | 23,3  | 60,7  | 6     | 7,4    | 7,0E+3 | already resolved with binoculars, only slightly better with telescope                   | N2                | 2:01  | 2:01  | 14:03   | in evening sky          | 19:12       | 14      | 19:52 | 2:21       | 36,9°   | 323,3°             | 125,8° |       |             |         |
| 76                | P    | Per    | 25,6  | 51,6  | 4,8   | 12     | 4,0E+3 | Little Dumbbell nebular: weakest object in Messier catalogue                            | N0                | 2:10  | 2:10  | 14:12   | in evening sky          | 19:12       | 15      | 19:54 | 2:23       | 31,7°   | 314,1°             | 126,3° |       |             |         |
| 50                | O    | Mon    | 105,8 | -8,3  | 16    | 5,9    | 3,5E+3 | beautiful with telescope and low magnification , little asymmetrical shape              | E8                | 14:13 | 0:47  | 19:32   | in evening sky          | 19:32       | 16      | 19:58 | 2:27       | 28,8°   | 204,5°             | 127,3° |       |             |         |
| 47                | O    | Pup    | 114,1 | -13,9 | 30    | 4,4    | 1,8E+3 | impressive with small instruments                                                       | E8                | 15:15 | 0:56  | 20:05   | in evening sky          | 20:05       | 17      | 20:00 | 2:29       | 25,0°   | 194,7°             | 127,8° |       |             |         |
| 46                | O    | Pup    | 115,4 | -14,8 | 27    | 6,1    | 6,0E+3 | big with binoculars, many stars with bigger telescope, rich of small stars              | E8                | 15:25 | 0:56  | 20:10   | in evening sky          | 20:10       | 18      | 20:02 | 2:31       | 24,2°   | 193,7°             | 128,3° |       |             |         |
| 48                | O    | Hya    | 123,5 | -5,8  | 54    | 5,8    | 2,5E+3 | beautiful and bright with binoculars                                                    | E10               | 15:12 | 2:14  | 20:43   | at transit              | 20:43       | 19      | 20:04 | 2:33       | 34,0°   | 186,4°             | 128,8° |       |             |         |

| Messier Catalogue |      |                |                |                |               |                |                 |                                                                                                       |     | Marathon Planning |           |               |                                 |              | Marathon on      |            |                  | 20.03.2004        |                      | $\lambda, \phi, T$ | -9,0° | 50,0°   | 2.453.084,5 |
|-------------------|------|----------------|----------------|----------------|---------------|----------------|-----------------|-------------------------------------------------------------------------------------------------------|-----|-------------------|-----------|---------------|---------------------------------|--------------|------------------|------------|------------------|-------------------|----------------------|--------------------|-------|---------|-------------|
| Mess.             | Type | Con-<br>stell. | Rekt.<br>[ ° ] | Dekl.<br>[ ° ] | Size<br>[ ' ] | Mag-<br>nitude | Dist.<br>[LYrs] | Description accord. to Karkoschka<br>"Atlas für Himmelsbeobachter"                                    | Pa. | Rise<br>UT        | Set<br>UT | Culmin.<br>UT | Classification<br>of visibility | best<br>time | Observ.<br>index | Time<br>UT | T after<br>Start | Height<br>ab. Hor | Azimuth<br>180:South | Star-<br>time      | seen? |         |             |
| No.               |      |                | [ ° ]          | [ ° ]          | [ ' ]         |                |                 |                                                                                                       |     | UT                | UT        | UT            |                                 | time         |                  | UT         | Start            | ab. Hor           | 180:South            | time               | y/n   | at time | Remarks     |
| 1                 | N    | Tau            | 83,6           | 22,0           | 6             | 8,4            | 4,0E+3          | Crab nebula: difficult with binoculars, irregular shape with bigger telescope (Supernova 1054)        | E3  | 10:10             | 1:57      | 18:04         | in evening sky                  | 19:12        | 20               | 20:08      | 2:37             | 44,4°             | 249,5°               | 129,8°             |       |         |             |
| 35                | O    | Gem            | 92,2           | 24,3           | 28            | 5,1            | 3,0E+3          | bright, beautiful resolved with telescope using low magnification                                     | E7  | 10:29             | 2:47      | 18:38         | in evening sky                  | 19:12        | 21               | 20:10      | 2:39             | 50,9°             | 243,2°               | 130,4°             |       |         |             |
| 38                | O    | Aur            | 82,1           | 35,8           | 21            | 6,4            | 4,0E+3          | partly resolved, interesting arrangement of small stars                                               | N6  | 7:58              | 3:53      | 17:58         | in evening sky                  | 19:12        | 22               | 20:14      | 2:43             | 52,0°             | 267,2°               | 131,4°             |       |         |             |
| 36                | O    | Aur            | 84,0           | 34,1           | 12            | 6              | 4,0E+3          | already resolved with binoculars, starry concentrations along arms                                    | N6  | 8:32              | 3:39      | 18:05         | in evening sky                  | 19:12        | 23               | 20:16      | 2:45             | 51,9°             | 263,9°               | 131,9°             |       |         |             |
| 37                | O    | Aur            | 88,1           | 32,5           | 24            | 5,6            | 4,0E+3          | seen as a big bright nebular with binoculars, with bigger telescope impressive number of stars        | N6  | 9:06              | 3:38      | 18:22         | in evening sky                  | 19:12        | 24               | 20:18      | 2:47             | 53,1°             | 258,7°               | 132,4°             |       |         |             |
| 41                | O    | CMa            | 101,7          | -20,7          | 38            | 4,5            | 2,5E+3          | very well resolved with binoculars, only little impressive with telescope                             | E6  | 15:04             | 23:28     | 19:16         | in evening sky                  | 19:16        | 25               | 20:22      | 2:51             | 13,9°             | 210,4°               | 133,4°             |       |         |             |
| 93                | O    | Pup            | 116,1          | -23,9          | 22            | 6,2            | 4,0E+3          | brighte Sterne with binoculars resolved, nebliger Hintergrund with telescope beautiful resolved       | E6  | 16:21             | 0:01      | 20:13         | at transit                      | 20:13        | 26               | 20:24      | 2:53             | 14,4°             | 196,7°               | 133,9°             |       |         |             |
| 44                | O    | Cnc            | 130,0          | 20,0           | 95            | 3,1            | 6,0E+2          | Praesepe: impressive with binoculars                                                                  | E9  | 13:27             | 4:50      | 21:09         | at transit                      | 21:09        | 27               | 20:28      | 2:57             | 59,8°             | 189,1°               | 134,9°             |       |         |             |
| 67                | O    | Cnc            | 132,6          | 11,8           | 30            | 6,9            | 2,5E+3          | big nebular with binoculars, very well resolved with telescope                                        | E9  | 14:23             | 4:16      | 21:19         | at transit                      | 21:19        | 28               | 20:30      | 2:59             | 51,7°             | 184,4°               | 135,4°             |       |         |             |
| 81                | X    | UMa            | 148,9          | 69,1           | 25,7          | 6,9            | 1,3E+7          | Bode's nebulae: easily seen with binoculars, bright center and star-shaped core                       | N8  | 10:28             | 10:28     | 22:24         | at transit                      | 22:24        | 29               | 21:24      | 3:53             | 70,9°             | 360,0°               | 148,9°             |       |         |             |
| 82                | X    | UMa            | 148,9          | 69,6           | 11,2          | 8,4            | 1,3E+7          | brightest accompanying galaxy of M81, almost seen edge-on, struktures with bigger telescope           | N8  | 10:28             | 10:28     | 22:24         | at transit                      | 22:24        | 30               | 21:26      | 3:55             | 70,4°             | 359,5°               | 149,4°             |       |         |             |
| 95                | X    | Leo            | 161,0          | 11,7           | 7,4           | 9,7            | 4,0E+7          | star-shaped core                                                                                      | E11 | 16:16             | 6:08      | 23:12         | at transit                      | 23:12        | 31               | 22:12      | 4:41             | 51,7°             | 180,0°               | 161,0°             |       |         |             |
| 96                | X    | Leo            | 161,7          | 11,8           | 7,1           | 9,2            | 4,0E+7          | rather elongated central area, star-shaped core                                                       | E11 | 16:19             | 6:12      | 23:15         | at transit                      | 23:15        | 32               | 22:14      | 4:43             | 51,8°             | 179,7°               | 161,5°             |       |         |             |
| 105               | X    | Leo            | 162,0          | 12,6           | 4,5           | 9,3            | 4,0E+7          | easier visible than M95 or M96, star-shaped core                                                      | E11 | 16:16             | 6:17      | 23:16         | at transit                      | 23:16        | 33               | 22:16      | 4:45             | 52,6°             | 180,0°               | 162,0°             |       |         |             |
| 65                | X    | Leo            | 169,7          | 13,1           | 10            | 9,3            | 4,0E+7          | round central area in front of elongated backgroud nebular                                            | E11 | 16:44             | 6:50      | 23:47         | at transit                      | 23:47        | 34               | 22:18      | 4:47             | 52,6°             | 168,4°               | 162,5°             |       |         |             |
| 66                | X    | Leo            | 170,0          | 13,0           | 8,7           | 9              | 4,0E+7          | visible with binoculars, interesting sight only with bigger telescopes, dust struktures dimly visible | E11 | 16:46             | 6:51      | 23:48         | at transit                      | 23:48        | 35               | 22:20      | 4:49             | 52,6°             | 168,7°               | 163,0°             |       |         |             |
| 109               | X    | UMa            | 179,4          | 53,3           | 7,6           | 9,8            | 6,0E+7          | bright core, otherwise weak                                                                           | N10 | 12:30             | 12:30     | 0:22          | at transit                      | 0:26         | 36               | 22:40      | 5:08             | 82,1°             | 60,9°                | 167,8°             |       |         |             |
| 40                | 2    | UMa            | 185,6          | 58,1           | 0,8           | 8,5            | 5,0E+2          | double star 50" separated                                                                             | N10 | 12:54             | 12:54     | 0:47          | at transit                      | 0:51         | 37               | 22:42      | 5:10             | 77,1°             | 44,6°                | 168,3°             |       |         |             |
| 108               | X    | UMa            | 167,8          | 55,6           | 8,3           | 10,1           | 4,5E+7          | edge-on, dust structures with bigger telescope hardly seen                                            | N10 | 11:43             | 11:43     | 23:40         | at transit                      | 23:40        | 38               | 22:44      | 5:12             | 84,4°             | 354,2°               | 168,8°             |       |         |             |
| 97                | P    | UMa            | 168,7          | 55,0           | 3,2           | 11,2           | 2,5E+3          | Owl nebular: dark eyes invisible with amateur class telescope                                         | N10 | 11:47             | 11:47     | 23:43         | at transit                      | 23:43        | 39               | 22:46      | 5:14             | 85,0°             | 356,0°               | 169,3°             |       |         |             |
| 98                | X    | Com            | 183,4          | 14,9           | 9,5           | 10,1           | 6,0E+7          | outer bounds weak, hardly structured                                                                  | E14 | 17:29             | 7:54      | 0:38          | at transit                      | 0:42         | 40               | 23:42      | 6:11             | 54,9°             | 180,0°               | 183,4°             |       |         |             |

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|-------------------|------|--------|-------|-------|-------|--------|--------|--------------------------------------------------------------------------------------------------------|-----|-------------------|-------|---------|----------------|------|-------------|-------|---------|------------|-----------|--------------------|-------|---------|-------------|
| Mess.             | Type | Con-   | Rekt. | Dekl. | Size  | Mag-   | Dist.  | Description accord. to Karkoschka                                                                      |     | Rise              | Set   | Culmin. | Classification | best | Observ.     | Time  | T after | Height     | Azimuth   | Star-              | seen? |         |             |
| No.               |      | stell. | [ ° ] | [ ° ] | [ ' ] | nitude | [LYrs] | "Atlas für Himmelsbeobachter"                                                                          | Pa. | UT                | UT    | UT      | of visibility  | time | index       | UT    | Start   | ab. Hor    | 180:South | time               | y/n   | at time | Remarks     |
| 99                | X    | Com    | 184,7 | 14,4  | 5,4   | 9,8    | 6,0E+7 | Pin-wheel galaxy: bright central area, with bigger telescopes light knots and beginning of spiral arms | E14 | 17:37             | 7:57  | 0:43    | at transit     | 0:47 | 41          | 23:44 | 6:13    | 54,4°      | 178,7°    | 183,9°             |       |         |             |
| 100               | X    | Com    | 185,7 | 15,8  | 6,9   | 9,4    | 6,0E+7 | elongated central area with star-shaped core                                                           | E14 | 17:33             | 8:08  | 0:47    | at transit     | 0:51 | 42          | 23:46 | 6:15    | 55,8°      | 177,8°    | 184,4°             |       |         |             |
| 85                | X    | Com    | 186,3 | 18,1  | 7,1   | 9,2    | 6,0E+7 | oval not structures galaxy with bright central area                                                    | E14 | 17:23             | 8:28  | 0:49    | at transit     | 0:53 | 43          | 23:48 | 6:17    | 58,1°      | 177,5°    | 184,9°             |       |         |             |
| 106               | X    | CVn    | 184,7 | 47,3  | 18,2  | 8,3    | 3,0E+7 | with bigger telescope weak dust structures, beginning of spiral arms visible                           | N12 | 12:51             | 12:51 | 0:43    | at transit     | 0:47 | 44          | 23:52 | 6:21    | 87,2°      | 196,9°    | 185,9°             |       |         |             |
| 61                | X    | Vir    | 185,4 | 4,4   | 6     | 9,7    | 6,0E+7 | spiral arms with bigger telescope hardly visible                                                       | E14 | 18:30             | 7:10  | 0:46    | at transit     | 0:50 | 45          | 23:56 | 6:25    | 44,4°      | 182,1°    | 186,9°             |       |         |             |
| 49                | X    | Vir    | 187,4 | 8,0   | 8,9   | 8,4    | 6,0E+7 | brightest galaxy of Virgo cluster, big                                                                 | E14 | 18:20             | 7:35  | 0:58    | at transit     | 0:58 | 46          | 23:58 | 6:27    | 48,0°      | 180,0°    | 187,4°             |       |         |             |
| 84                | X    | Vir    | 186,2 | 12,8  | 5     | 9,3    | 6,0E+7 | no structures, in area with many 12m bright galaxies                                                   | E14 | 17:51             | 7:55  | 0:49    | at transit     | 0:53 | 47          | 0:02  | 6:31    | 52,8°      | 183,6°    | 188,4°             |       |         |             |
| 86                | X    | Vir    | 186,5 | 12,9  | 7,4   | 9,2    | 6,0E+7 | no structures visible                                                                                  | E14 | 17:52             | 7:56  | 0:50    | at transit     | 0:54 | 48          | 0:04  | 6:33    | 52,8°      | 183,9°    | 188,9°             |       |         |             |
| 87                | X    | Vir    | 187,7 | 12,4  | 7,2   | 8,6    | 6,0E+7 | Virgo A: central galaxy of Virgo cluster, brighter core                                                | E14 | 17:59             | 7:58  | 0:59    | at transit     | 0:59 | 49          | 0:06  | 6:35    | 52,4°      | 182,7°    | 189,4°             |       |         |             |
| 88                | X    | Com    | 188,0 | 14,4  | 6,9   | 9,5    | 6,0E+7 | few structures seen with telescope                                                                     | E14 | 17:50             | 8:10  | 1:00    | at transit     | 1:00 | 50          | 0:08  | 6:37    | 54,4°      | 183,2°    | 189,9°             |       |         |             |
| 91                | X    | Com    | 188,8 | 14,5  | 5,4   | 10,2   | 6,0E+7 | no structures visible                                                                                  | E14 | 17:53             | 8:14  | 1:03    | at transit     | 1:03 | 51          | 0:10  | 6:39    | 54,5°      | 182,7°    | 190,4°             |       |         |             |
| 89                | X    | Vir    | 188,9 | 12,5  | 4,2   | 9,8    | 6,0E+7 | bright, almost star-shaped core, perfect round                                                         | E14 | 18:04             | 8:04  | 1:04    | at transit     | 1:04 | 52          | 0:14  | 6:43    | 52,4°      | 184,0°    | 191,4°             |       |         |             |
| 90                | X    | Vir    | 189,2 | 13,1  | 9,5   | 9,5    | 6,0E+7 | brighter elongated central arae, most extended galaxy of Virgo cluster                                 | E14 | 18:02             | 8:08  | 1:05    | at transit     | 1:05 | 53          | 0:16  | 6:45    | 53,0°      | 184,4°    | 191,9°             |       |         |             |
| 58                | X    | Vir    | 189,4 | 11,8  | 5,4   | 9,8    | 6,0E+7 | bulk of bulk galaxy detectable with bigger telescope                                                   | E14 | 18:09             | 8:02  | 1:06    | at transit     | 1:06 | 54          | 0:18  | 6:47    | 51,7°      | 184,8°    | 192,4°             |       |         |             |
| 59                | X    | Vir    | 190,5 | 11,6  | 5,1   | 9,8    | 6,0E+7 | dim star-shapeder core, use medium magnification                                                       | E14 | 18:15             | 8:06  | 1:10    | at transit     | 1:10 | 55          | 0:20  | 6:49    | 51,5°      | 183,8°    | 192,9°             |       |         |             |
| 60                | X    | Vir    | 190,9 | 11,5  | 7,2   | 8,8    | 6,0E+7 | bright star-shaped core                                                                                | E14 | 18:17             | 8:07  | 1:12    | at transit     | 1:12 | 56          | 0:22  | 6:51    | 51,4°      | 184,0°    | 193,4°             |       |         |             |
| 68                | G    | Hya    | 189,9 | -26,7 | 12    | 8,2    | 3,0E+4 | with bigger telescopes resolvable into center                                                          | E12 | 21:36             | 4:40  | 1:08    | at transit     | 1:08 | 57          | 0:26  | 6:55    | 13,2°      | 184,2°    | 194,4°             |       |         |             |
| 104               | X    | Vir    | 190,0 | -11,6 | 8,9   | 8,3    | 5,0E+7 | Sombrero nebula: almost central dust lane visibvle only with bigger telescopes                         | E12 | 20:06             | 6:11  | 1:08    | at transit     | 1:08 | 58          | 0:28  | 6:57    | 28,2°      | 185,5°    | 194,9°             |       |         |             |
| 94                | X    | CVn    | 192,7 | 41,1  | 11    | 8,2    | 3,0E+7 | bright core, with bigger telescope beginning of spiral arms visible                                    | N12 | 13:23             | 13:23 | 1:19    | at transit     | 1:19 | 59          | 0:32  | 7:01    | 80,8°      | 195,5°    | 195,9°             |       |         |             |
| 63                | X    | CVn    | 198,9 | 42,0  | 12,3  | 8,6    | 3,0E+7 | Sunflower galaxy: prominent core, otherwise invisible                                                  | N12 | 13:48             | 13:48 | 1:44    | at transit     | 1:44 | 60          | 0:34  | 7:03    | 81,8°      | 167,0°    | 196,4°             |       |         |             |
| 51                | X    | CVn    | 202,5 | 47,2  | 11    | 8,4    | 3,0E+7 | Whirlpool-Galaxie: wonderful spiral arms with bigger telescope and NGC5195, most beautiful galaxv      | N12 | 14:02             | 14:02 | 1:58    | at transit     | 1:58 | 61          | 0:36  | 7:05    | 85,4°      | 125,2°    | 196,9°             |       |         |             |

| Messier Catalogue |      |            |           |           |          |            |              |                                                                                                          | Marathon Planning |        |            |                              |                | Marathon on   |         |               | 20.03.2004     |                   | $\lambda, \phi, T$ | -9,0°  | 50,0° | 2.453.084,5 |
|-------------------|------|------------|-----------|-----------|----------|------------|--------------|----------------------------------------------------------------------------------------------------------|-------------------|--------|------------|------------------------------|----------------|---------------|---------|---------------|----------------|-------------------|--------------------|--------|-------|-------------|
| Mess. No.         | Type | Con-stell. | Rekt. [°] | Dekl. [°] | Size ['] | Mag-nitude | Dist. [LYrs] | Description accord. to Karkoschka<br>"Atlas für Himmelsbeobachter" Pa.                                   | Rise UT           | Set UT | Culmin. UT | Classification of visibility | best time      | Observ. index | Time UT | T after Start | Height ab. Hor | Azimuth 180:South | Star-time          | seen?  |       |             |
| 64                | X    | Com        | 194,2     | 21,7      | 9,3      | 8,5        | 2,2E+4       | Black Eyed galaxy: elongated absorption near core dimly visible with bigger telescope                    | E13               | 17:33  | 9:21       | 1:25                         | at transit     | 1:25          | 62      | 0:41          | 7:10           | 61,5°             | 187,8°             | 198,2° |       |             |
| 53                | G    | Com        | 198,2     | 18,2      | 12,6     | 7,7        | 6,0E+4       | prominent core, edge partly resolved with telescope                                                      | E13               | 18:10  | 9:16       | 1:41                         | at transit     | 1:41          | 63      | 0:43          | 7:12           | 58,2°             | 180,9°             | 198,7° |       |             |
| 83                | X    | Hya        | 204,2     | -29,9     | 11,2     | 7,6        | 2,0E+7       | visible with binoculars, wonderful with bigger telescope, bright core, elongated bulk                    | E16               | 22:58  | 5:11       | 2:05                         | at transit     | 2:05          | 64      | 1:05          | 7:33           | 10,1°             | 180,0°             | 204,2° |       |             |
| 3                 | G    | CVn        | 205,5     | 28,4      | 16,2     | 6,4        | 3,0E+4       | resolvable with bigger telescopes only                                                                   | E15               | 17:31  | 10:53      | 2:10                         | at transit     | 2:10          | 65      | 1:10          | 7:39           | 68,4°             | 180,0°             | 205,5° |       |             |
| 101               | X    | UMa        | 210,8     | 54,3      | 26,9     | 7,7        | 2,5E+7       | Spiralrad-Galaxie: bright core area, enormous size seen in darkest sky                                   | N10               | 14:35  | 14:35      | 2:31                         | at transit     | 2:31          | 66      | 1:31          | 8:00           | 85,7°             | 0,1°               | 210,8° |       |             |
| 102               | X    | Dra        | 226,6     | 55,7      | 5,2      | 10         | 4,0E+7       | elliptical nebular                                                                                       | N16               | 15:38  | 15:38      | 3:34                         | at transit     | 3:34          | 67      | 1:33          | 8:02           | 79,2°             | 52,4°              | 211,3° |       |             |
| 5                 | G    | Ser        | 229,6     | 2,1       | 17,4     | 5,8        | 2,5E+4       | wonderful, especially with bigger telescopes, elliptical shape, rather easy to resolve                   | E15               | 21:37  | 9:59       | 3:46                         | at transit     | 3:40          | 68      | 2:15          | 8:44           | 41,6°             | 169,6°             | 221,8° |       |             |
| 13                | G    | Her        | 250,4     | 36,4      | 16,6     | 5,9        | 2,5E+4       | Herkules cluster: bright with binoculars, outer cluster resolvable                                       | N14               | 19:05  | 15:17      | 5:09                         | in morning sky | 3:40          | 69      | 2:19          | 8:48           | 66,0°             | 113,9°             | 222,8° |       |             |
| 92                | G    | Her        | 259,3     | 43,1      | 11,2     | 6,5        | 3,0E+4       | similar to M13, but dimmer                                                                               | N14               | 17:49  | 17:49      | 5:44                         | in morning sky | 3:40          | 70      | 2:21          | 8:50           | 64,6°             | 91,8°              | 223,3° |       |             |
| 57                | P    | Lyr        | 283,4     | 33,0      | 2,5      | 9          | 1,8E+3       | Ring nebular in Lyra: almost star-shaped with binoculars, a bigger telescope shows oval ring and central | N18               | 21:59  | 16:46      | 7:21                         | in morning sky | 3:40          | 71      | 2:25          | 8:54           | 44,0°             | 88,4°              | 224,4° |       |             |
| 56                | G    | Lyr        | 289,1     | 30,1      | 7,1      | 8,3        | 3,0E+4       | quite weak, difficult to resolve into stars                                                              | N18               | 22:50  | 16:41      | 7:43                         | in morning sky | 3:40          | 72      | 2:27          | 8:56           | 38,7°             | 87,5°              | 224,9° |       |             |
| 71                | G    | Sge        | 298,4     | 18,7      | 7,2      | 8,3        | 1,3E+4       | interesting strukture, triangular shape, is maybe a rich open cluster                                    | E21               | 0:43   | 15:58      | 8:20                         | in morning sky | 3:40          | 73      | 2:31          | 9:00           | 25,4°             | 90,7°              | 225,9° |       |             |
| 27                | P    | Vul        | 299,9     | 22,7      | 15,2     | 8,1        | 1,0E+3       | Big Dumbbell nebular: maybe the most beautiful planetary nebular, more struktures senn with telescope    | E21               | 0:24   | 16:29      | 8:26                         | in morning sky | 3:40          | 74      | 2:33          | 9:02           | 27,6°             | 86,9°              | 226,4° |       |             |
| 29                | O    | Cyg        | 306,0     | 38,5      | 7        | 6,6        | 4,0E+3       | only a few stars, use only low magnification                                                             | N20               | 22:07  | 19:39      | 8:51                         | in morning sky | 3:40          | 75      | 2:37          | 9:06           | 35,2°             | 69,8°              | 227,4° |       |             |
| 39                | O    | Cyg        | 323,0     | 48,4      | 32       | 4,6        | 1,0E+3       | few, but bright stars, interesting sight only with binoculars                                            | N24               | 22:04  | 22:04      | 9:59                         | in morning sky | 3:40          | 76      | 2:39          | 9:08           | 32,3°             | 51,5°              | 227,9° |       |             |
| 12                | G    | Oph        | 251,8     | -1,9      | 14,5     | 6,6        | 1,8E+4       | schwach elliptisch with binoculars, gut resolved with telescope, looks like open cluster                 | E17               | 23:25  | 11:09      | 5:15                         | in morning sky | 3:40          | 77      | 2:43          | 9:12           | 34,5°             | 151,8°             | 228,9° |       |             |
| 10                | G    | Oph        | 254,2     | -4,1      | 15,1     | 6,6        | 1,5E+4       | only edge well resolved with bigger telescope                                                            | E17               | 23:45  | 11:08      | 5:24                         | in morning sky | 3:40          | 78      | 2:45          | 9:14           | 31,8°             | 150,5°             | 229,4° |       |             |
| 14                | G    | Oph        | 264,4     | -3,2      | 11,7     | 7,6        | 3,0E+4       | oval, nebular with amateur size telescopes                                                               | E17               | 0:17   | 11:53      | 6:05                         | in morning sky | 3:40          | 79      | 2:47          | 9:16           | 29,1°             | 139,6°             | 229,9° |       |             |
| 107               | G    | Oph        | 248,1     | -13,1     | 10       | 8,1        | 2,0E+4       | hardly resolvable even with bigger telescope                                                             | E17               | 0:01   | 9:59       | 5:00                         | in morning sky | 3:40          | 80      | 2:51          | 9:20           | 25,1°             | 161,4°             | 230,9° |       |             |
| 9                 | G    | Oph        | 259,8     | -18,5     | 9,3      | 7,9        | 2,5E+4       | hardly resolvable                                                                                        | E17               | 1:21   | 10:16      | 5:46                         | in morning sky | 3:40          | 81      | 2:53          | 9:22           | 17,0°             | 151,8°             | 231,4° |       |             |
| 62                | G    | Oph        | 255,3     | -30,1     | 14,1     | 6,6        | 2,0E+4       | very asymmetrical, nebulous arms, interesting object                                                     | E18               | 2:24   | 8:37       | 5:29                         | in morning sky | 3:40          | 82      | 2:57          | 9:26           | 7,4°              | 160,1°             | 232,4° |       |             |

| Messier Catalogue |      |            |       |       |       |        |        |                                                                                                |     | Marathon Planning |       |         |                |      | Marathon on |      |         | 20.03.2004 |           | $\lambda, \phi, T$ | -9,0° | 50,0°   | 2.453.084,5 |
|-------------------|------|------------|-------|-------|-------|--------|--------|------------------------------------------------------------------------------------------------|-----|-------------------|-------|---------|----------------|------|-------------|------|---------|------------|-----------|--------------------|-------|---------|-------------|
| Mess.             | Type | Con-stell. | Rekt. | Dekl. | Size  | Mag-   | Dist.  | Description accord. to Karkoschka                                                              |     | Rise              | Set   | Culmin. | Classification | best | Observ.     | Time | T after | Height     | Azimuth   | Star-              | seen? |         |             |
| No.               |      |            | [ ° ] | [ ° ] | [ ' ] | nitude | [LYrs] | "Atlas für Himmelsbeobachter"                                                                  | Pa. | UT                | UT    | UT      | of visibility  | time | index       | UT   | Start   | ab. Hor    | 180:South | time               | y/n   | at time | Remarks     |
| 19                | G    | Oph        | 255,6 | -26,3 | 13,5  | 7,2    | 3,0E+4 | rather oval, egde resolvable                                                                   | E18 | 1:55              | 9:09  | 5:30    | in morning sky | 3:40 | 83          | 2:59 | 9:28    | 11,1°      | 159,3°    | 232,9°             |       |         |             |
| 26                | O    | Sct        | 281,3 | -9,4  | 15    | 8      | 5,0E+3 | still nebular with smaller telescopes                                                          | E19 | 1:59              | 12:30 | 7:12    | in morning sky | 3:40 | 84          | 3:03 | 9:32    | 17,7°      | 130,3°    | 233,9°             |       |         |             |
| 11                | O    | Sct        | 282,8 | -6,3  | 14    | 5,8    | 6,0E+3 | Wild Duck cluster: a little triangular, a bigger telescope shows high number of stars          | E19 | 1:49              | 12:51 | 7:18    | in morning sky | 3:40 | 85          | 3:05 | 9:34    | 19,9°      | 127,8°    | 234,4°             |       |         |             |
| 80                | G    | Sco        | 244,2 | -23,0 | 8,9   | 7,2    | 3,0E+4 | very bright center, can take high magnification                                                | E18 | 0:42              | 8:46  | 4:44    | in morning sky | 3:40 | 86          | 3:09 | 9:38    | 16,6°      | 171,5°    | 235,4°             |       |         |             |
| 4                 | G    | Sco        | 245,9 | -26,5 | 26,3  | 5,9    | 7,0E+3 | easy to find, wonderfully resolvable with telescope                                            | E18 | 1:17              | 8:29  | 4:51    | in morning sky | 3:40 | 87          | 3:11 | 9:40    | 13,0°      | 170,8°    | 235,9°             |       |         |             |
| 23                | O    | Sgr        | 269,2 | -19,0 | 27    | 5,5    | 2,0E+3 | impressive at low magnification                                                                | E20 | 2:02              | 10:50 | 6:24    | in morning sky | 3:40 | 88          | 3:15 | 9:44    | 15,3°      | 148,4°    | 236,9°             |       |         |             |
| 24                | O    | Sgr        | 274,2 | -18,5 | 100   | 4      | 8,0E+3 | bright star cloud of milky way                                                                 | E20 | 2:19              | 11:13 | 6:44    | in morning sky | 3:40 | 89          | 3:17 | 9:46    | 14,2°      | 144,1°    | 237,4°             |       |         |             |
| 20                | C    | Sgr        | 270,5 | -23,0 | 29    | 6,3    | 6,0E+3 | Trifidnebular: division into three by radial dark dust lanes, use filter and low magnification | E20 | 2:31              | 10:31 | 6:29    | in morning sky | 3:40 | 90          | 3:21 | 9:50    | 11,6°      | 150,0°    | 238,4°             |       |         |             |
| 8                 | N    | Sgr        | 270,9 | -24,4 | 90    | 5,8    | 6,0E+3 | Hourglass nebular: phantastic gasous nebular when viewed with filter, open cluster to the east | E20 | 2:42              | 10:23 | 6:31    | in morning sky | 3:40 | 91          | 3:23 | 9:52    | 10,4°      | 150,6°    | 238,9°             |       |         |             |
| 21                | O    | Sgr        | 271,1 | -22,5 | 13    | 5,9    | 4,0E+3 | few stars, bright but inconspicuous                                                            | E20 | 2:31              | 10:37 | 6:32    | in morning sky | 3:40 | 92          | 3:25 | 9:54    | 12,2°      | 150,2°    | 239,4°             |       |         |             |
| 16                | C    | Ser        | 274,7 | -13,8 | 35    | 6      | 7,0E+3 | eagle nebular: without filter is the cluster more conspicuous                                  | E20 | 1:55              | 11:41 | 6:46    | in morning sky | 3:40 | 93          | 3:27 | 9:56    | 19,3°      | 144,0°    | 239,9°             |       |         |             |
| 18                | O    | Sgr        | 274,9 | -17,1 | 9     | 6,9    | 4,0E+3 | low in stars, not much conspicuous, situated before light background                           | E20 | 2:13              | 11:24 | 6:47    | in morning sky | 3:40 | 94          | 3:29 | 9:58    | 16,3°      | 145,7°    | 240,4°             |       |         |             |
| 17                | C    | Sgr        | 275,2 | -16,2 | 46    | 6      | 6,0E+3 | Omega nebular: phantastically structured, bright arms and dark dust layers                     | E20 | 2:10              | 11:30 | 6:48    | in morning sky | 3:40 | 95          | 3:31 | 10:00   | 17,2°      | 145,5°    | 240,9°             |       |         |             |
| 25                | O    | Sgr        | 277,9 | -19,2 | 32    | 4,6    | 3,0E+3 | very beautifully resolved with binoculars, irregular structure                                 | E20 | 2:37              | 11:24 | 6:59    | in morning sky | 3:40 | 96          | 3:33 | 10:02   | 13,7°      | 144,7°    | 241,4°             |       |         |             |
| 28                | G    | Sgr        | 276,1 | -24,9 | 11,2  | 6,9    | 2,0E+4 | asymmetrical shape, bright center, hardly resolvable                                           | E20 | 3:06              | 10:41 | 6:51    | in morning sky | 3:40 | 97          | 3:37 | 10:06   | 9,4°       | 149,3°    | 242,4°             |       |         |             |
| 22                | G    | Sgr        | 279,1 | -23,9 | 24    | 5,1    | 1,0E+4 | very bright, oval, impressively resolved with bigger telescope                                 | E20 | 3:12              | 10:59 | 7:03    | in morning sky | 3:40 | 98          | 3:39 | 10:08   | 9,4°       | 146,8°    | 242,9°             |       |         |             |
| 15                | G    | Peg        | 322,5 | 12,2  | 12,3  | 6,4    | 3,5E+4 | relatively easy to find, a little oval, outer edge resolvable with bigger telescopes           | E23 | 2:58              | 16:59 | 9:57    | in morning sky | 3:40 | 99          | 3:43 | 10:12   | 16,6°      | 90,7°     | 243,9°             |       |         |             |
| 6                 | O    | Sco        | 265,0 | -32,2 | 15    | 4,2    | 2,0E+3 | Butterfly cluster: wonderful with any kind of instrument                                       | E18 | 3:22              | 8:56  | 6:07    | in morning sky | 3:40 | 100         | 3:47 | 10:16   | 5,9°       | 163,0°    | 244,9°             |       |         |             |
| 7                 | O    | Sco        | 268,4 | -34,8 | 80    | 3,3    | 9,0E+2 | well resolved with binoculars, southernmost Messier Object                                     | E18 | 4:05              | 8:41  | 6:21    | in morning sky | 4:09 | 101         | 3:49 | 10:18   | 2,8°       | 161,3°    | 245,4°             |       |         |             |
| 69                | G    | Sgr        | 277,8 | -32,3 | 7,1   | 7,7    | 3,0E+4 | partly resolved with bigger telescope                                                          | E20 | 4:14              | 9:46  | 6:58    | in morning sky | 4:09 | 102         | 3:53 | 10:22   | 3,1°       | 153,8°    | 246,4°             |       |         |             |
| 70                | G    | Sgr        | 280,8 | -32,3 | 7,8   | 8,1    | 3,0E+4 | dim, prominet center, outer edge just resolvable                                               | E20 | 4:26              | 9:58  | 7:10    | in morning sky | 4:09 | 103         | 3:55 | 10:24   | 2,4°       | 151,9°    | 246,9°             |       |         |             |

| Messier Catalogue |      |        |       |       |       |        |        |                                                                                           | Marathon Planning |       |         |                           |                | Marathon on |      |         | 20.03.2004 |           | $\lambda, \phi, T$ | -9,0°  | 50,0°   | 2.453.084,5 |  |
|-------------------|------|--------|-------|-------|-------|--------|--------|-------------------------------------------------------------------------------------------|-------------------|-------|---------|---------------------------|----------------|-------------|------|---------|------------|-----------|--------------------|--------|---------|-------------|--|
| Mess.             | Type | Con-   | Rekt. | Dekl. | Size  | Mag-   | Dist.  | Description accord. to Karkoschka                                                         | Rise              | Set   | Culmin. | Classification            | best           | Observ.     | Time | T after | Height     | Azimuth   | Star-              | seen?  |         |             |  |
| No.               |      | stell. | [ ° ] | [ ° ] | [ ' ] | nitude | [LYrs] | "Atlas für Himmelsbeobachter" Pa.                                                         | UT                | UT    | UT      | of visibility             | time           | index       | UT   | Start   | ab. Hor    | 180:South | time               | y/n    | at time | Remarks     |  |
| 54                | G    | Sgr    | 283,7 | -30,5 | 9,1   | 7,7    | 8,0E+4 | hardly resolvable, can take high magnification                                            | E20               | 4:21  | 10:27   | 7:22                      | in morning sky | 4:09        | 104  | 3:57    | 10:26      | 3,3°      | 149,3°             | 247,4° |         |             |  |
| 72                | G    | Aqr    | 313,3 | -12,5 | 5,9   | 9,4    | 6,0E+4 | weakest globular cluster of Messier catalogue, not resolvable                             | E24               | 4:22  | 14:22   | 9:20                      | in morning sky | 4:09        | 105  | 4:01    | 10:30      | 5,8°      | 117,3°             | 248,4° |         |             |  |
| 73                | O    | Aqr    | 314,7 | -12,6 | 3     | 9      | 2,0E+3 | 3-4 stars                                                                                 | E24               | 4:28  | 14:27   | 9:25                      | in morning sky | 4:09        | 106  | 4:03    | 10:32      | 5,2°      | 116,7°             | 248,9° |         |             |  |
| 2                 | G    | Aqr    | 323,3 | -0,8  | 12,9  | 6,5    | 4,0E+4 | bright big nebular with binoculars, very difficult to resolve into stars                  | E24               | 4:05  | 15:59   | 10:00                     | in morning sky | 4:09        | 107  | 4:05    | 10:34      | 9,7°      | 103,0°             | 249,4° |         |             |  |
| 75                | G    | Sgr    | 301,5 | -21,9 | 6     | 8,6    | 6,0E+4 | distant globular cluster, small, not resolvable, extraordinary bright center              | E22               | 4:28  | 12:42   | 8:33                      | in morning sky | 4:09        | 108  | 4:09    | 10:38      | 5,1°      | 133,6°             | 250,4° |         |             |  |
| 55                | G    | Sgr    | 295,0 | -30,9 | 19    | 7      | 1,8E+4 | rather big nebular with binoculars, with bigger telescope resolved down into the center   | E22               | 5:09  | 11:08   | 8:07                      | not visible    | 4:09        | 109  | 4:13    | 10:42      | 0,4°      | 143,7°             | 251,4° |         |             |  |
| 30                | G    | Cap    | 325,1 | -23,2 | 11    | 7,5    | 2,5E+4 | prominent center, elongated shell, a bigger telescope resolves outer parts of the cluster | E22               | 6:10  | 14:07   | 10:07                     | not visible    | 4:09        | 110  | 4:15    | 10:44      | -7,5°     | 117,5°             | 251,9° |         |             |  |
| Sun               | -    |        | 0,7   | 0,3   |       |        | 0      | -                                                                                         | 3:44              | 19:14 | 11:29   | start of astron. twilight | 3:44           | (P0)        | 3:44 | 10:13   | -16,5°     | 68,8°     | 244,1°             | -      |         |             |  |
| Sun               | -    |        | 0,7   | 0,3   |       |        | 0      | -                                                                                         | 4:13              | 18:45 | 11:29   | twilight starts           | 4:13           | (P0)        | 4:13 | 10:42   | -12,0°     | 74,9°     | 251,4°             | -      |         |             |  |
| Sun               | -    |        | 0,7   | 0,3   |       |        | 0      | -                                                                                         | 5:25              | 17:32 | 11:29   | Sunrise                   | 5:25           | (P0)        | 5:25 | 11:54   | -0,5°      | 89,0°     | 269,5°             | -      |         |             |  |
| Mercury           | -    |        | 13,0  | 6,3   |       |        | 0      | Mercury                                                                                   | -                 | 5:51  | 18:51   | 12:22                     | at dusk        | 17:31       | (P1) | 17:31   | 0:00       | 12,9°     | 264,4°             | 90,4°  |         |             |  |
| Venus             | -    |        | 42,2  | 18,8  |       |        | 0      | Venus                                                                                     | -                 | 6:42  | 21:53   | 14:18                     | in evening sky | 19:12       | (P2) | 19:12   | 1:41       | 24,7°     | 270,2°             | 115,8° |         |             |  |
| Mars              | -    |        | 56,7  | 21,0  |       |        | 0      | Mars                                                                                      | -                 | 7:26  | 23:04   | 15:16                     | in evening sky | 19:12       | (P3) | 19:12   | 1:41       | 35,6°     | 260,3°             | 115,8° |         |             |  |
| Saturn            | -    |        | 97,0  | 22,8  |       |        | 0      | Saturn                                                                                    | -                 | 9:58  | 1:56    | 17:57                     | in evening sky | 19:12       | (P5) | 19:12   | 1:41       | 59,1°     | 215,4°             | 115,8° |         |             |  |
| Jupiter           | -    |        | 163,9 | 8,4   |       |        | 0      | Jupiter                                                                                   | -                 | 15:45 | 5:03    | 22:24                     | at transit     | 22:24       | (P4) | 22:24   | 4:53       | 48,4°     | 180,0°             | 163,9° |         |             |  |
| Neptun            | -    |        | 317,0 | -16,5 |       |        | 0      | Neptun                                                                                    | -                 | 3:58  | 13:15   | 8:39                      | at dawn        | 4:13        | (P7) | 4:13    | 10:42      | 2,1°      | 119,2°             | 251,4° |         |             |  |
| Uranus            | -    |        | 336,4 | -10,6 |       |        | 0      | Uranus                                                                                    | -                 | 4:45  | 15:04   | 9:56                      | not visible    | 4:13        | (P6) | 4:13    | 10:42      | -4,9°     | 100,6°             | 251,4° |         |             |  |