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 Program sun.f:

 Solar system: Schwarzschild radius, ruler and radar distance.

 c  [m/s]          = 0.2998E+09    speed of light
 G  [m^3/(kg*s^2)] = 0.6674E-10    gravitational constant
 y  [s]            = 0.3154E+08    year
 ly [m]            = 0.9454E+16    light year xly
 sm [kg]           = 0.1989E+31    mass  of the sun
 sr [m]            = 0.6957E+09    radius of the sun
 r1 [m]            = 0.1496E+12    distance earth-sun = 1 astronomical
unit [au]
 sg [m/s^2]        =  274.2 = G*sm/sr^2 sun surface gravitational
acceleration

(a) Sun Schwarzschild radius rs [m] =  2953.3
    rs/sr [dimensionless]           =  0.4245E-05

 Units of coice c=G=1 and everything in seconds:

 meter [s]          = 0.3336E-08    = xm [s]
 kg [s]             = 0.2477E-35    = xkg [s]
 sg [s]             = 0.9147E-06    grav acceleration
 cg [m/s^2]         =  274.2        back conversion
 sm [s]             = 0.4925E-05    sun mass sms
 sr [s]             =  2.321        sun radius srs
 2*sms/srs [dimensionless] =  0.4245E-05

(b) Coordinate and ruler distance:

    dr coordinate distance earth to radius of the sun,
    dl ruler distance earth to radius of the sun.

 dr [s]             =  496.6787859     coordinate distance
 dl [s]             =  496.6788123     ruler distance
 drul [s]           =    0.0000265     = dl-dr = 0.265E-04
 Conversion to meter:
 smsmeter, xlnrat = 1476.6255555738514 5.370801811592918
 dr [m]             = 0.1489043000E+12 coordinate distance
 dl [m]             = 0.1489043079E+12 ruler distance
 drul [m]           = 7930.7           = dl-dr

(c) Radar distance:

 tdil [s]           = -0.9870E-08      dilation fraction
 fdil [s]           =  0.9999999901    dilation factor
 2*drul [s]         =    0.0000529
 R [s]              =  496.6788339     radar distance
 drad [s]           =    0.0000480      = R-dr = 0.480E-04
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fdil dilation factor accounts for 2*drul-drad = 0.490E-05
dradl [s]          =    0.0000216      = R-dl = 0.216E-04

radar distance R is larger than the other distance definitions.

Conversion to meter:
R [m]              = 0.1489043144E+12 radar distance
drad [m]           = 14391.6          = R-dr
dradl [m]          =  6460.9          = R-dl
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