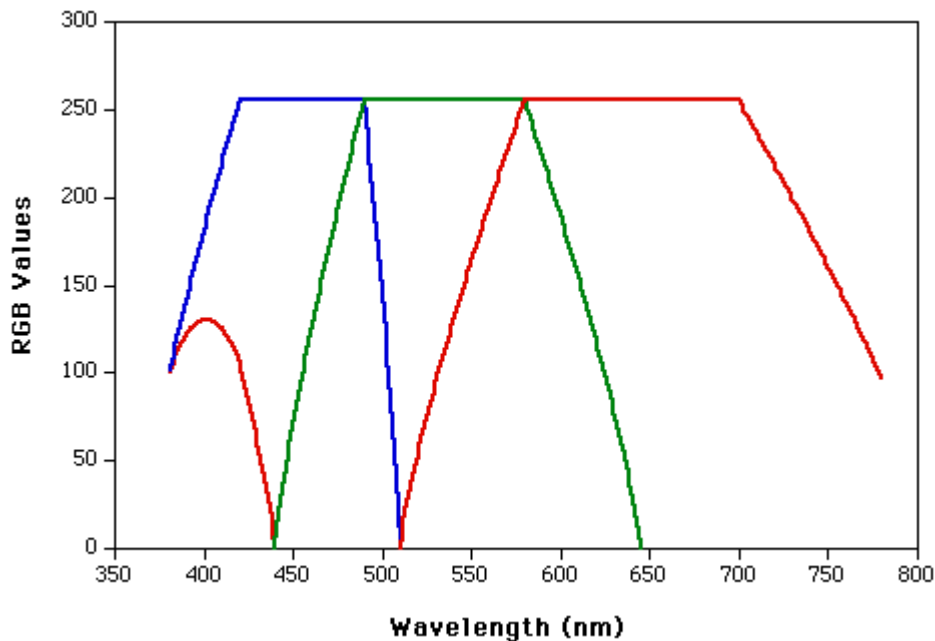


Approximate RGB values for Visible Wavelengths



FORTRAN Code

```

c
c   RGB VALUES FOR VISIBLE WAVELENGTHS   by Dan Bruton (astro@tamu.edu)
c
c   This program can be found at
c   http://www.physics.sfasu.edu/astro/color.html
c   and was last updated on February 20, 1996.
c
c   This program will create a ppm (portable pixmap) image of a spectrum.
c   The spectrum is generated using approximate RGB values for visible
c   wavelengths between 380 nm and 780 nm.
c   NetPBM's ppmtogif can be used to convert the ppm image
c   to a gif. The red, green and blue values (RGB) are
c   assumed to vary linearly with wavelength (for GAMMA=1).
c   NetPBM Software: ftp://ftp.cs.ubc.ca/ftp/archive/netpbm/
c
c   IMPLICIT REAL*8 (a-h, o-z)
c   REAL*8 CV(500,500,3)
c
c   IMAGE INFO - WIDTH, HEIGHT, DEPTH, GAMMA
c
c   M=400
c   N=50
c   MAX=255
c   GAMMA=.80
c
c   WRITE OUTPUT TO PPM FILE
c
c   OPEN(UNIT=20, FILE=' temp. ppm', STATUS=' UNKNOWN' )
1  FORMAT(A10)
  WRITE(20,1) 'P3          '
  WRITE(20,1) '# temp. ppm'
  WRITE(20,*) M, N
  WRITE(20,*) MAX
  DO J=1, N
    DO I=1, M
c
c      WAVELENGTH = WL
c

```

```

WL = 380. + REAL(I * 400. / M)

IF ((WL. GE. 380.) .AND. (WL. LE. 440.)) THEN
  R = -1. * (WL-440.) / (440. -380.)
  G = 0.
  B = 1.
ENDIF
IF ((WL. GE. 440.) .AND. (WL. LE. 490.)) THEN
  R = 0.
  G = (WL-440.) / (490. -440.)
  B = 1.
ENDIF
IF ((WL. GE. 490.) .AND. (WL. LE. 510.)) THEN
  R = 0.
  G = 1.
  B = -1. * (WL-510.) / (510. -490.)
ENDIF
IF ((WL. GE. 510.) .AND. (WL. LE. 580.)) THEN
  R = (WL-510.) / (580. -510.)
  G = 1.
  B = 0.
ENDIF
IF ((WL. GE. 580.) .AND. (WL. LE. 645.)) THEN
  R = 1.
  G = -1. * (WL-645.) / (645. -580.)
  B = 0.
ENDIF
IF ((WL. GE. 645.) .AND. (WL. LE. 780.)) THEN
  R = 1.
  G = 0.
  B = 0.
ENDIF

```

```

c
c LET THE INTENSITY SSS FALL OFF NEAR THE VISION LIMITS
c

```

```

  IF (WL. GT. 700.) THEN
    SSS=.3+.7* (780.-WL)/(780.-700.)
  ELSE IF (WL. LT. 420.) THEN
    SSS=.3+.7*(WL-380.)/(420.-380.)
  ELSE
    SSS=1.
  ENDIF

```

```

c
c GAMMA ADJUST AND WRITE IMAGE TO AN ARRAY
c

```

```

  CV(I, J, 1)=(SSS*R)**GAMMA
  CV(I, J, 2)=(SSS*G)**GAMMA
  CV(I, J, 3)=(SSS*B)**GAMMA
ENDDO
ENDDO

```

```

c
c WRITE IMAGE TO PPM FILE
c

```

```

DO J=1, N
DO I=1, M
  WL = 380. + REAL(I * 400. / M)
  IR=INT(MAX*CV(I, J, 1))
  IG=INT(MAX*CV(I, J, 2))
  IB=INT(MAX*CV(I, J, 3))

```

```

c
c ITYPE=1 - PLAIN SPECTRUM
c ITYPE=2 - MARK SPECTRUM AT 100 nm INTERVALS
c ITYPE=3 - HYDROGEN BALMER EMISSION SPECTRA
c ITYPE=4 - HYDROGEN BALMER ABSORPTION SPECTRA
c

```

```

  ITYPE=4
  IF (ITYPE.EQ.2) THEN
    DO K=400, 700, 100
      IF ((ABS(INT(WL)-K).LT.1).AND.(J.LE.20)) THEN

```

```
        IR=MAX
        IG=MAX
        IB=MAX
    ENDIF
ENDDO
ELSEIF (ITYPE.EQ. 3) THEN
    IF ((ABS(WL-656. ). GT. 1. ) . and. (ABS(WL-486. ). GT. 1. ) . and.
*      (ABS(WL-433. ). GT. 1. ) . and. (ABS(WL-410. ). GT. 1. )
*      . AND. (ABS(WL-396. ). GT. 1. )) THEN
        IR = 0
        IG = 0
        IB = 0
    ENDIF
ELSEIF (ITYPE.EQ. 4) THEN
    IF ((ABS(WL-656. ). LT. 1. 1) . or. (ABS(WL-486. ). LT. 1. 1) . or.
*      (ABS(WL-433. ). LT. 1. 1) . or. (ABS(WL-410. ). LT. 1. 1)
*      . or. (ABS(WL-396. ). LT. 1. 1)) THEN
        IR = 0
        IG = 0
        IB = 0
    ENDIF
ENDIF
WRITE(20,*) IR, IG, IB
ENDDO
ENDDO
STOP
END
```