

```

0001 // ++++++
0002 funcprot(0);
0003 // ++++++
0004 // ++++++
0005
0006 function [x, y, z]=fSphereData()
0007     u=linspace(-%pi/2, %pi/2, 100);
0008     v=linspace(0, 2*%pi, 100);
0009
0010     x=cos(u)'*cos(v);
0011     y=cos(u)'*sin(v);
0012     z=sin(u)'*ones(v);
0013 endfunction
0014
0015 // ++++++
0016
0017 // defines the color for each facet, considering dot product
0018 // of each direction the the light (cosang)
0019
0020 function [col]=setColor(cosang, icol)
0021     c1=-0.03;
0022     c2=0.03;
0023     c3=1;
0024
0025     col=zeros(cosang);
0026
0027     I=find(cosang<=c1);
0028     col(I)=icol(1);
0029
0030     I=find(cosang>c1 & cosang<c2);
0031     col(I)=icol(1)+round(((cosang(I)-c1)/(c2-c1))*(icol(2)-icol(1)));
0032     // small middle zone
0033
0034     I=find(cosang>=c2);
0035     col(I)=icol(2)+round(((cosang(I)-c2)/(c3-c2))*(icol(3)-icol(2)));
0036     // yellow zone
0037
0038 endfunction
0039
0040 // ++++++
0041
0042 // Test
0043
0044 [x,y,z]=fSphereData();
0045
0046 tic();
0047 f=scf();
0048 f.visible="off";
0049 f.immediate_drawing="off";
0050 clf(f);
0051
0052 plot3d2(x,y,z);
0053
0054 e=gce();
0055 fcData=e.data;

```

```

0056
0057 // The light comes from +z
0058 // d.z is the scalar product of the vector with the direction
0059 // of the light => color
0060
0061 icol=1+[1,31,62];
0062 sphereCol=setColor(fcData.z,icol);
0063
0064 TL=tlist(["3d" "x" "y" "z" "color"],...
0065         fcData.x,fcData.y,fcData.z,sphereCol);
0066
0067 e.data=TL;
0068 e.color_flag=2; // 'flat' shading
0069 e.color_mode=-1; // no edges
0070
0071 // graphic settings
0072 a=gca();
0073 a.axes_visible=["off","off","off"];
0074 a.box="off";
0075 a.x_label.text="";
0076 a.y_label.text="";
0077 a.z_label.text="";
0078 a.isoview="on";
0079
0080 f.immediate_drawing="on";
0081 f.visible="on";
0082
0083 dt=(0.8-toc())*1000;
0084 sleep(max(dt,1)); // sleeps at most 0.8 s

```