Dome Projection using a Vertex Shader

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Viewing Volume = (-1,-1) to (1,1)

Edge of the circle represents the edge of the dome projection = your left, right, bottom, top as you are sitting in the theater.
const float PI = 3.14159265f;
void main( void )
{
  vec4 pos = gl_ModelViewMatrix * gl_Vertex;
  float lenxy = length( pos.xy );
  float phi = atan2( lenxy , -pos.z );
  float r = phi / (PI/2.);
  pos.xy = r * ( pos.xy / lenxy );
  gl_Position = gl_ProjectionMatrix * pos;
}

Dome Shader:

Interactive graphics application:

Old interactive graphics application with dome projection:

New interactive graphics application with dome projection:
Testing out in the Reuben H. Fleet Science Center