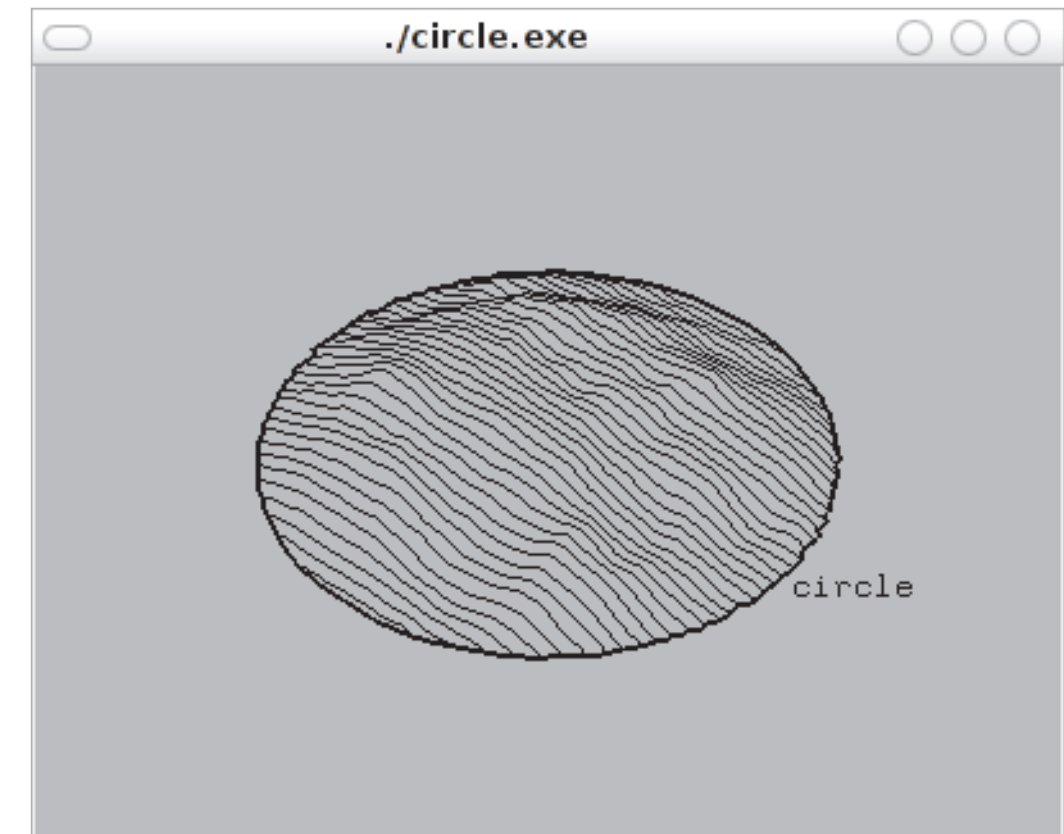


# An Ambisonic Musical Instrument, Making use of Physical Modelling Techniques

Tao: A physical modelling sound synthesis language

```
circle.tao - gedit
File Edit View Search Tools Documents Help
New Open Save Print Undo Redo Cut Copy Paste
circle.tao
Audio rate: 44100;
Circle circle(300 Hz, 20 secs);
Init:
  circle.lockPerimeter();
  ...
Score 5 secs:
  At 0 secs for 1 msec:
    circle(0.3,0.3).applyForce(linear(40,0));
    ...
  ...
Ln 15, Col 1 INS
```



Ambisonics:  
Placing sound  
within a 3d space

Encoding a sound in Ambisonic B format:

$X = \cos A \cdot \cos B$  (front-back)  
 $Y = \sin A \cdot \cos B$  (left-right)  
 $Z = \sin B$  (up-down)  
 $W = 0.707$  (pressure signal)

Where,  
A = angle from centre front  
B = elevation

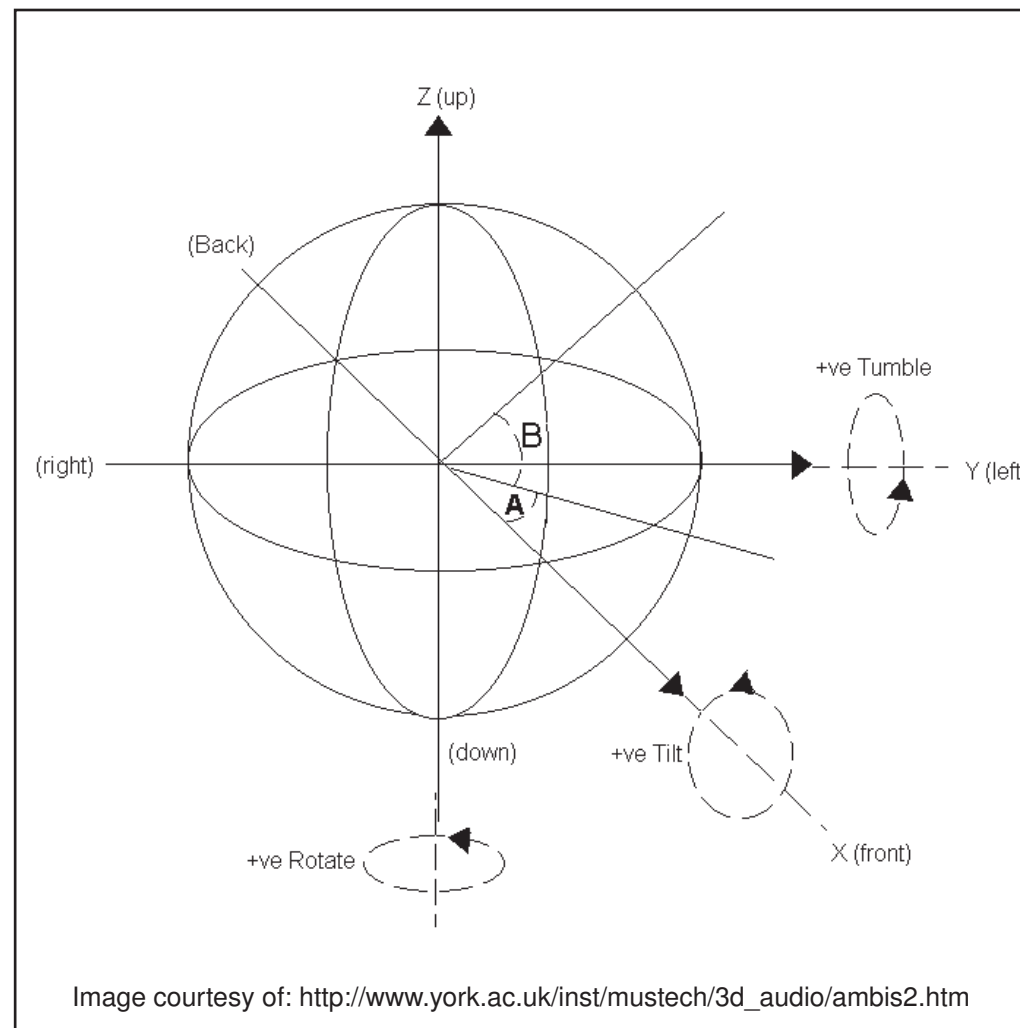


Image courtesy of: [http://www.york.ac.uk/inst/mustech/3d\\_audio/ambis2.htm](http://www.york.ac.uk/inst/mustech/3d_audio/ambis2.htm)

An artist's  
impression of the  
final instrument:

