

# ENGR290: Renewable Energy

## Homework 2: Coordinate Transformations

Assigned: Feb 4

Due: Feb 11, 2014

Write a Matlab/Octave function to do a coordinate transformation for a single axis PV tracker. The function should have the prototype shown below:

$$[x, y, z] = \text{singleAxis}(\theta, \phi, \alpha) \quad (1)$$

where:

**x,y,z** Unit vectors defining the direction of the normal to the PV collection surface.

**theta** Azimuth angle of the tracker axis with respect to north (position toward east)

**phi** Elevation angle of the tracker axis with respect to local level (0=horizontal)

**alpha** Rotation angle about the axis (positive toward east)

The function should be in its own file.

Test the function by calling it with the following and plotting the results:

1.  $[x,y,z] = \text{singleAxis}([0:90],0,0)$
2.  $[x,y,z] = \text{singleAxis}(0,[0:90],0)$
3.  $[x,y,z] = \text{singleAxis}(0,0,[0:90])$