Листинг BNO055 часть на Питонии

```
from vpython import *
from time import *
import numpy as np
import math
import serial
ad=serial.Serial('com9', 115200)
sleep(1)
scene.range=5
toRad = 2*np.pi/360
toDeg = 1/toRad
scene.forward=vector(-1,-1,-1)
scene.width=600
scene.height=600
xarrow=arrow(length=3,shaftwidth=.1,color=color.red, axis=vector(1,0,0))
yarrow=arrow(length=3,shaftwidth=.1,color=color.green, axis=vector(0,1,0))
zarrow=arrow(length=3,shaftwidth=.1,color=color.blue, axis=vector(0,0,1))
frontArrow  =arrow(length=6,shaftwidth=.15,color=color.purple, axis=vector(1,0,0))
upArrow    =arrow(length=1,shaftwidth=.15,color=color.magenta, axis=vector(0,1,0))
sideArrow   =arrow(length=2,shaftwidth=.15,color=color.orange, axis=vector(0,0,1))
bBoard=box(length=6, width=2, height=.2, opacity=.8, pos=vector(0,0,0))
bno=box(length=1, width=.75, height=.1, pos=vector(.5, .1+.05,0), color=color.blue)
nano=box(length=1.75, width=.6, height=.1, pos=vector(2,.1+.05,0), color=color.green)
myObject = compound([bBoard, bno, nano])
while (True):
  while(ad.inWaiting()==0):
    pass
  try:
    dataPacket = ad.readline()
    dataPacket=str(dataPacket,'utf-8')
    splitPacket=dataPacket.split(",")
    q0=float(splitPacket[0])
    q1=float(splitPacket[1])
    q2=float(splitPacket[2])
    q3=float(splitPacket[3])
    roll=-math.atan2(q0*q1+q2*q3, 1-2*(q1*q1+q2*q2))
    pitch=math.asin(2*(q0*q2-q3*q1))
    yaw=-math.atan2(2*(q0*q3+q1*q2),1-2*(q2*q2+q3*q3))-np.pi/2
    rate(50)
    k=vector(cos(yaw)*cos(pitch), sin(pitch), sin(yaw)*cos(pitch))
    y=vector(0,1,0)
    s=cross(k,y)
    v=cross(s,k)
    vrot=v*cos(roll)+cross(k,v)*sin(roll)
    frontArrow.axis=k
    sideArrow.axis=cross(k,vrot)
    upArrow.axis=vrot
    frontArrow.length = 5
    sideArrow.length = 2
    myObject.axis=k
    myObject.up=vrot
  except:
    pass
```

Листинг BNO055 часть на Ардуино

```
#include <Wire.h>
#include <Adafruit_Sensor.h>
#include <Adafruit_BNO055.h>
#include <utility/imumaths.h>
#include <math.h>

#define BNO055_SAMPLERATE_DELAY_MS (100)
Adafruit_BNO055 myIMU = Adafruit_BNO055(55, 0x29, &Wire);

void setup() {
Serial.begin(115200);
myIMU.begin();
delay(1000);
myIMU.setExtCrystalUse(true);
}

void loop() {
  uint8_t system, gyro, accel, mg = 0;
  myIMU.getCalibration(&system, &gyro, &accel, &mg);
  imu::Quaternion quat = myIMU.getQuat();

  Serial.print(quat.w());
  Serial.print(",");
  Serial.print(quat.x());
  Serial.print(",");
  Serial.print(quat.y());
  Serial.print(",");
  Serial.print(quat.z());
  Serial.print(",");
  Serial.print(accel);
  Serial.print(",");
  Serial.print(gyro);
  Serial.print(",");
  Serial.print(mg);
  Serial.print(",");
  Serial.println(system);

  delay(BNO055_SAMPLERATE_DELAY_MS);
}
```