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#!/usr/bin/env python
# goto_satellite.py
# position the telescope to point to the anticipated satellite passing spot
# for a given time and locations
# 06/2007
# mb
#---------------------------------------
import os
import serial
import time
from LX200gps import *
#-----------------------
from ephem_helper import *
from ephem_mathematics import *
#---------------------------
#satellite for 27 July  [RA, DEC]
# calculated with sat_find and checked manually with CalSky
#-------------------------------------------
iridium15 = ["21:44:12", "52:44:26"]
iridium15_t = "22:25:59"
#-------------------------------------------
#load destination
destination = iridium15
#-------------------------------------------
location_down = ["22:45:25.01", "-02:16:25.02"]
SCOPE_ON = 1
twrite = 2.0
WIN = 1
threshold = 0.0005

if(WIN):
   #check this number in the device manager AFTER you plug the usb2serial cable
   #the correct port num is the reported number-1...
   port = 6        #COM4->3 COM7->6
   print "running windows - serial com with port ", port , "\n"
else:
   port = "/dev/ttyUSB0"
   print "we are on LINUX with: ", port
#----------------------------



if(SCOPE_ON):
        serialobject = start_telescope(port)
        time.sleep(twrite)
        [RA,DEC] = get_telescope_position(serialobject)
        print "start RA:", RA, "start DEC:", DEC
        #set the slew rate (fastest)
        serialobject.write("#:RS#")
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        #move to the destination
        move_telescope_to_location_p(serialobject, destination)
        [RA,DEC] = get_telescope_position(serialobject)
        print "current RA:", RA, "current DEC:", DEC

        #new: check the difference between desired and achieved goal
        currentposition = RA,DEC
        val = close_enough(destination, currentposition, threshold)
        if(val == 0):
                print "correcting..."
                move_telescope_to_location_p(serialobject, destination)
                [RA,DEC] = get_telescope_position(serialobject)
                print "end RA:", RA, "end DEC:", DEC
        else:
                print "no correction required."

    finished = stop_telescope(serialobject)

raw_input("hit a key to end...")
```