GFRJ’S Flight simulation student-developed software

About us

V Festival Brasileiro de Minifoguetes 2013
1º lugar: apogeu 1.000 m
Associação Brasileira de Minifoguetes

ATOM - 3º LUGAR
CATEGORIA 10K SRAD SOLID MOTORS
GFRJ

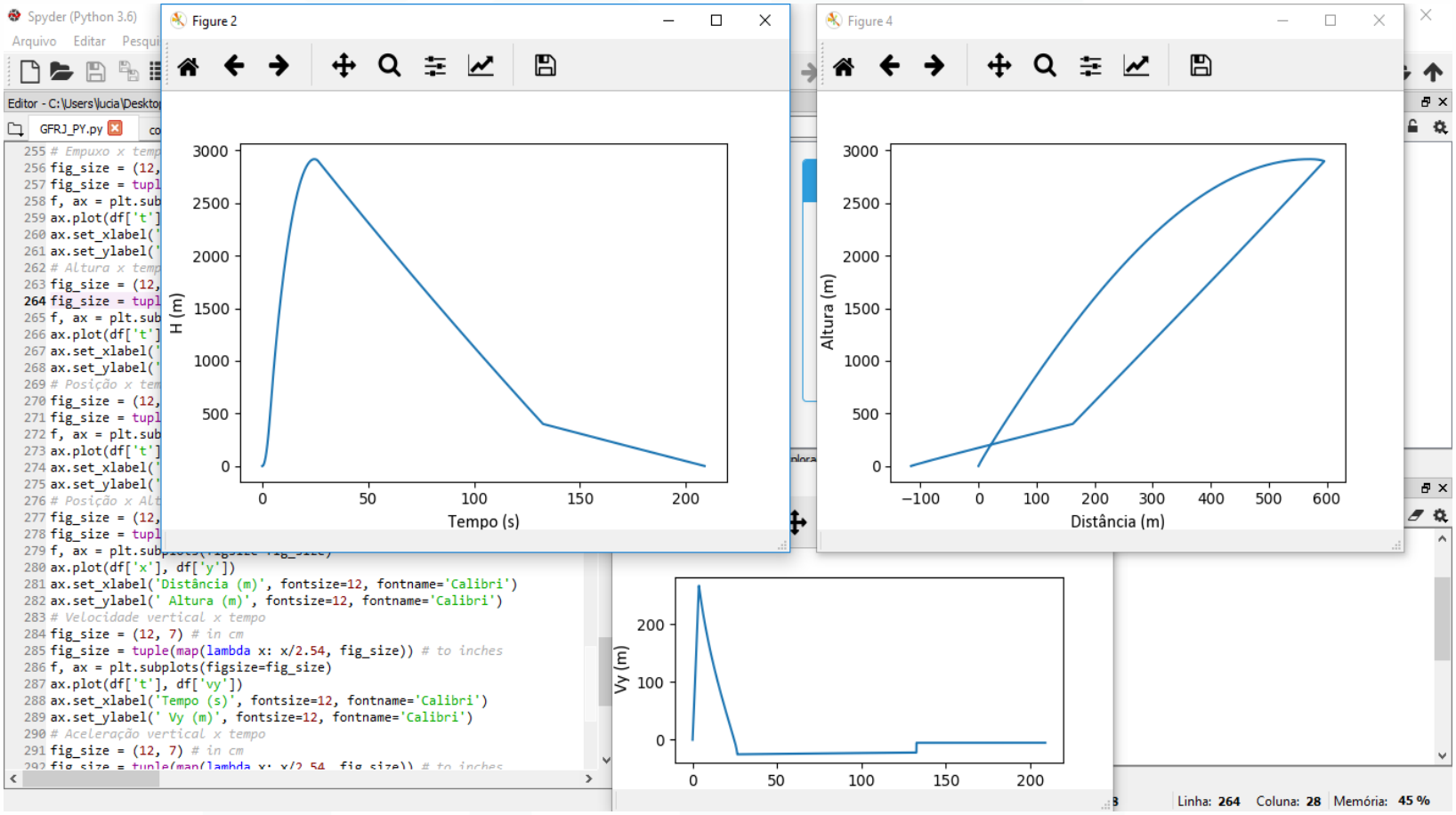
#Encontro
O céu é o limite
Estudantes vão levar Brasil a mundial de foguetes nos EUA

Flight simulation

- Introduction
- Code
- Goals
- Next steps

Introduction

Code

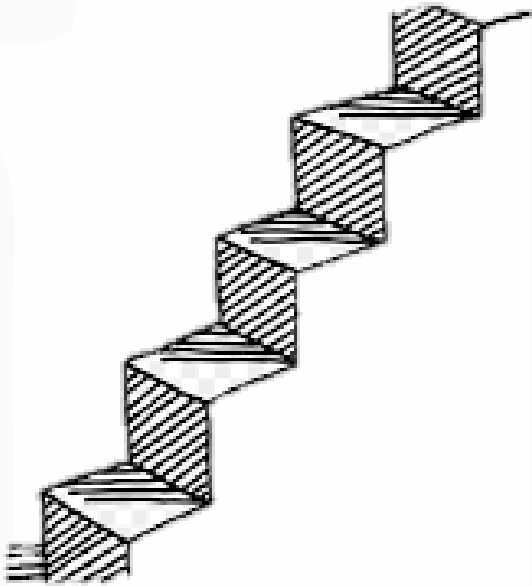

Spyder (Python 3.6)
Arquivo Editar Pesqui
Editor - C:\Users\lucia\Deskto
GFRJ_PY.py
255 # Empuxo x temp
256 fig_size = (12,
257 fig_size = tupl
258 f, ax = plt.sub
259 ax.plot(df['t']
260 ax.set_xlabel('
261 ax.set_ylabel('
262 # Altura x temp
263 fig_size = (12,
264 fig_size = tupl
265 f, ax = plt.sub
266 ax.plot(df['t']
267 ax.set_xlabel('
268 ax.set_ylabel('
269 # Posição x tem
270 fig_size = (12,
271 fig_size = tupl
272 f, ax = plt.sub
273 ax.plot(df['t']
274 ax.set_xlabel('
275 ax.set_ylabel('
276 # Posição x Alt
277 fig_size = (12,
278 fig_size = tupl
279 f, ax = plt.sub
280 ax.plot(df['x'], df['y'])
281 ax.set_xlabel('Distância (m)', fontsize=12, fontname='Calibri')
282 ax.set_ylabel(' Altura (m)', fontsize=12, fontname='Calibri')
283 # Velocidade vertical x tempo
284 fig_size = (12, 7) # in cm
285 fig_size = tuple(map(lambda x: x/2.54, fig_size)) # to inches
286 f, ax = plt.subplots(figsize=fig_size)
287 ax.plot(df['t'], df['vy'])
288 ax.set_xlabel('Tempo (s)', fontsize=12, fontname='Calibri')
289 ax.set_ylabel(' Vy (m)', fontsize=12, fontname='Calibri')
290 # Aceleração vertical x tempo
291 fig_size = (12, 7) # in cm
Figure 2
H (m)
Tempo (s)
Figure 4
Altura (m)
Distância (m)
Vy (m)
Linha: 264 Coluna: 28 Memória: 45 %

Goals

- Analyzing all the trajectory of the rocket
- Falling time
- Apogee
- Maximum Mach number

Next steps

- Organizing, modularize and structure the code;
- Creating a graphical interface for the program and animations of the trajectory traveled by the rocket;
- Adding more parameters;
- Implementing body dynamics;
- Implementing 6 Dof (Fx,Fy,Fz,Mx,My,Mz);



THANK YOU