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import matplotlib.pyplot as plt
from mpl_toolkits.mplot3d import axes3d
from mpl_toolkits.mplot3d.art3d import Line3DCollection
from matplotlib.animation import FuncAnimation
from bum import*
ai = np.amin(xo[:,0:3])
bi = np.amax(xo[:,0:3])
fig1 = plt.figure()
ax = fig1.add_subplot(111, projection = "3d")
ci = 0.05*(bi-ai)
ax.set_xlim(ai-ci,bi+ci)
ax.set_ylim(ai-ci,bi+ci)
ax.set_zlim(ai-ci,bi+ci)
ax.set_title("Boomerang trajectory", fontdict = {"fontname": "DejaVu Sans",
"fontsize": 10})
ax.set_xlabel("x axis")
ax.set_ylabel("y axis")
ax.set_zlabel("z axis")
x1 = xo[:,0]
x2 = xo[:,1]
x3 = xo[:,2]
ax.plot(x1,x2,x3, color = "red", linewidth = 1)
plt.show()
ant = input("Animation?(Y/N)")
if ant == "Y" :
    fig2 = plt.figure()
    ax1 = fig2.add_subplot(111, projection = "3d")
    d = np.array([0,1,0])
    for k in range(2):
        f = np.array([0,1,0])@(ta[k+1].transpose())
        d = np.vstack((d,f))
    d = 2*ci*d
    def anim(frame) :
        ax1.cla()
        ax1.set_title("Boomerang", fontdict = {"fontname": "DejaVu Sans",
"fontsize": 10})
        ax1.set_xlabel("x axis")
        ax1.set_ylabel("y axis")
        ax1.set_zlabel("z axis")
        ax1.set_xlim(ai-ci,bi+ci)
        ax1.set_ylim(ai-ci,bi+ci)
        ax1.set_zlim(ai-ci,bi+ci)
        x1 = xo[:frame,0]
        x2 = xo[:frame,1]
        x3 = xo[:frame,2]
        pg = ax1.plot(x1,x2,x3, color = "k", linewidth = 0.5)
        g = xo[frame,0:3]
        for k in range(3):
            fa = xo[frame,0:3]+ d[k]@m(wo[frame,0:3])
            g = np.vstack((g,fa))
        ki = np.empty((0,2,3))
        for k in range(3):
            u = np.vstack((g[0,:],g[k+1,:]))
            u = np.array([u])
            ki = np.concatenate((ki,u),axis = 0)
        col = Line3DCollection(ki,linewidths = 1.5, colors =
["red","green","blue"])
        pl = ax1.add_collection(col)
        return pg,pl
    ani = FuncAnimation(fig2,anim, frames = range(len(xo)),interval = 10, repeat
= False)
    anr = input("Save animation?(Y/N)")
    if anr == "Y" :
        ani.save("/home/victor/Dokumente/Pol/abum.mp4",fps = 20, extra_args =
```

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["-vcodec", "libx264"])
        print("Animation saved")
    plt.show()
```