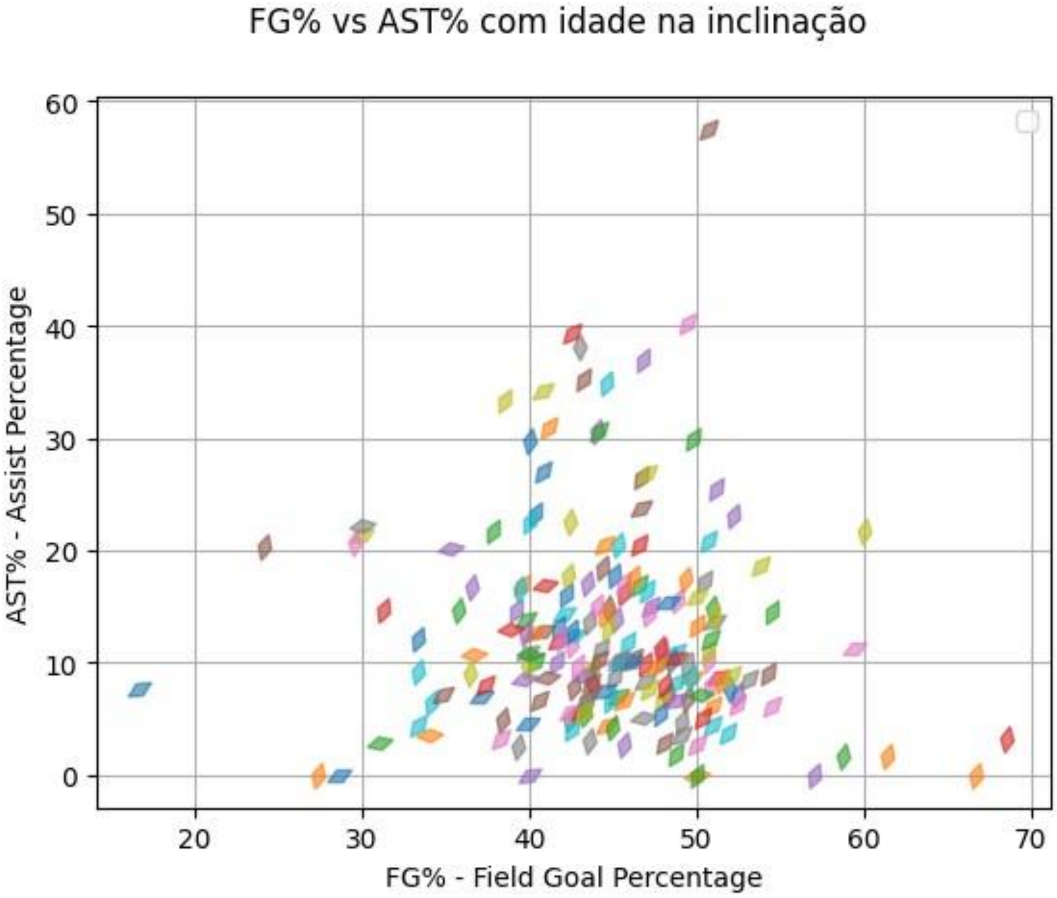
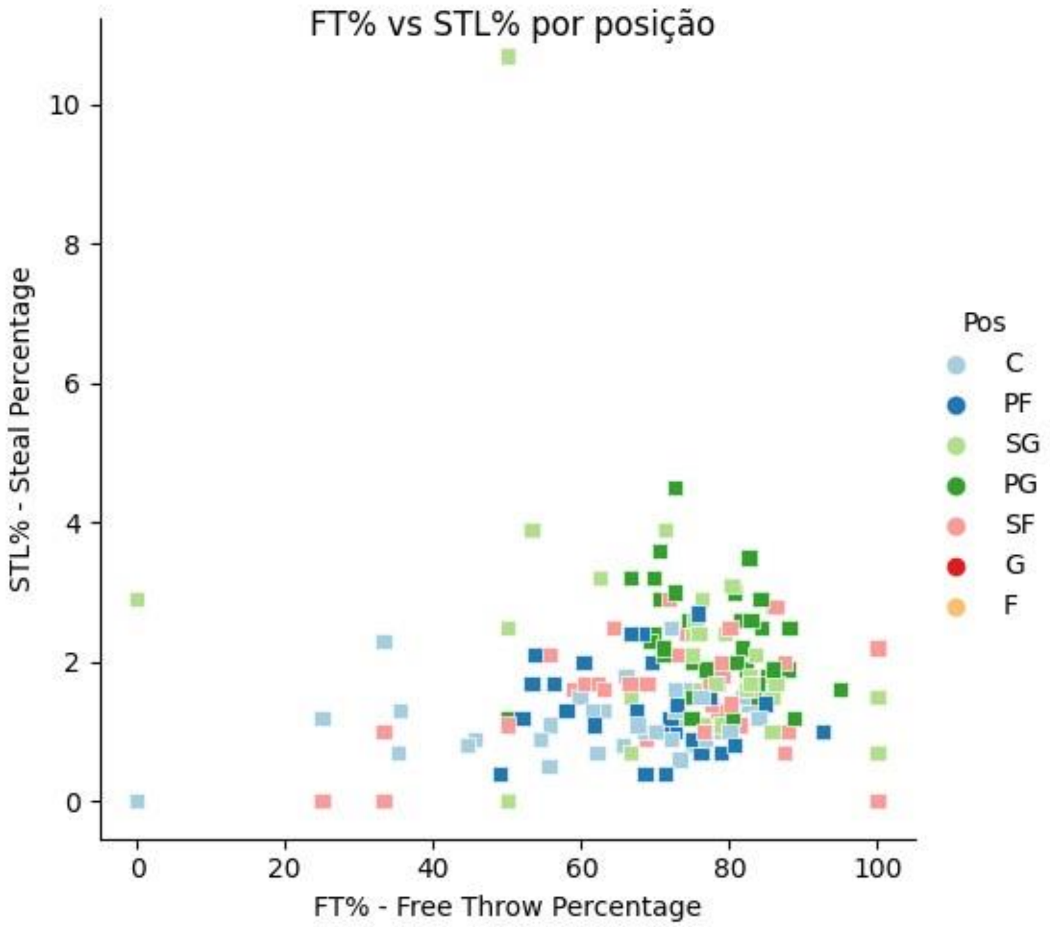
```
import pandas as pd
import numpy as np
import io
from matplotlib import pyplot as plt from google.colab import
files uploaded = files.upload() nba =
pd.read_csv('/content/Seasons_Stats.csv') nba = nba[(nba['FG%'] >
0) & (nba['FG%'] < 1) & (nba['TS%'] > 0) &      (nba['TS%'] < 1) &
(nba['2P%'] > 0) & (nba['2P%'] < 1)] nba = nba.iloc[1000:,
:].sample(100)
 incl = np.array(nba.loc[:,'Age'])
x = np.array(nba.loc[:,'FG%'])*100
y = np.array(nba.loc[:,'AST%']) z
= np.array(nba.loc[:,'Tm'])
 i = np.arange(0, len(incl), 1) j = (incl -
min(incl))/(max(incl) - min(incl)) w = -90*j j
= 0  for k in i:
  marker = (2, 1, w[k])
if z[k] == z[k-1]:
    plt.plot(x[k], y[k], marker = marker, markersize = 10, alpha = 0.6)
else:     j +=1     plt.plot(x[k], y[k], marker = marker, markersize =
10, alpha = 0.6) plt.legend(scatterpoints = 1) plt.xlabel('FG% - Field
Goal Percentage') plt.ylabel('AST% - Assist Percentage')
plt.fig.suptitle('FG% vs AST% com idade na inclinação') plt.grid()
plt.show()
```

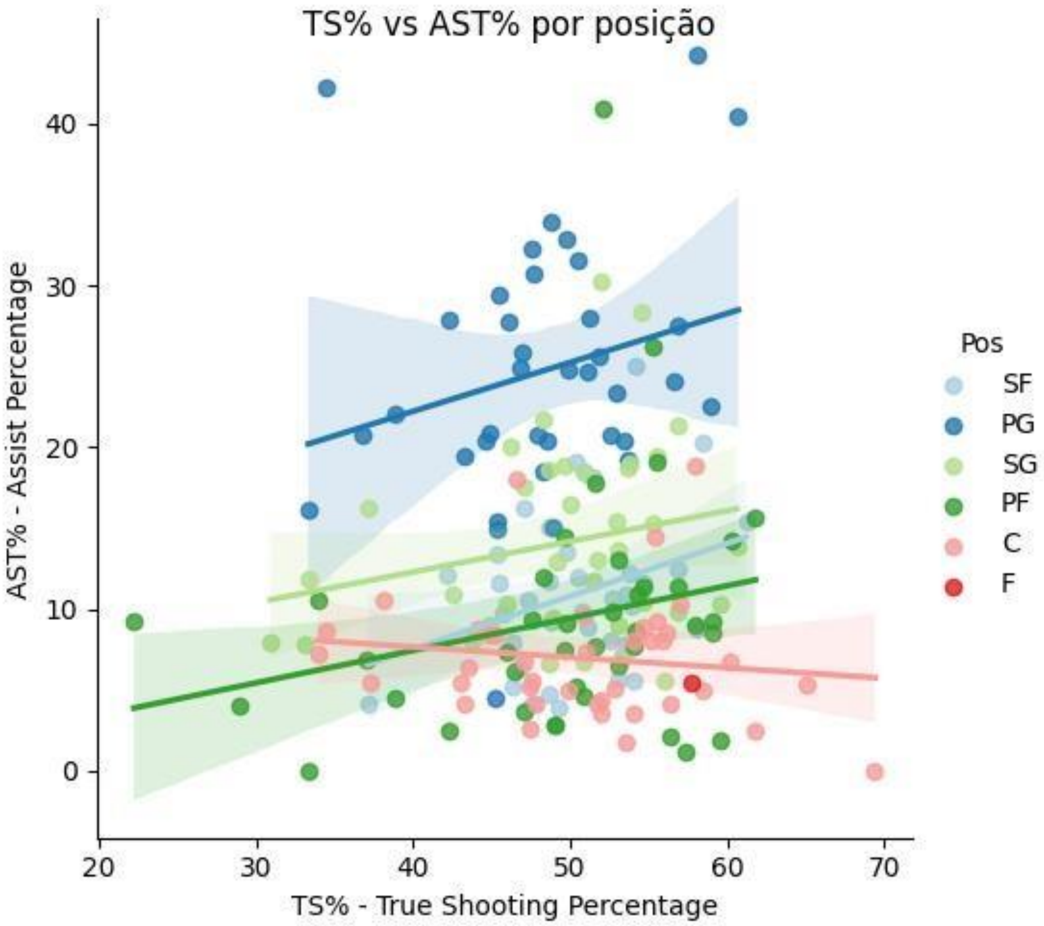


Na inclinação é apresentado a variável idade e nas cores a variável que representa o time de cada jogador.

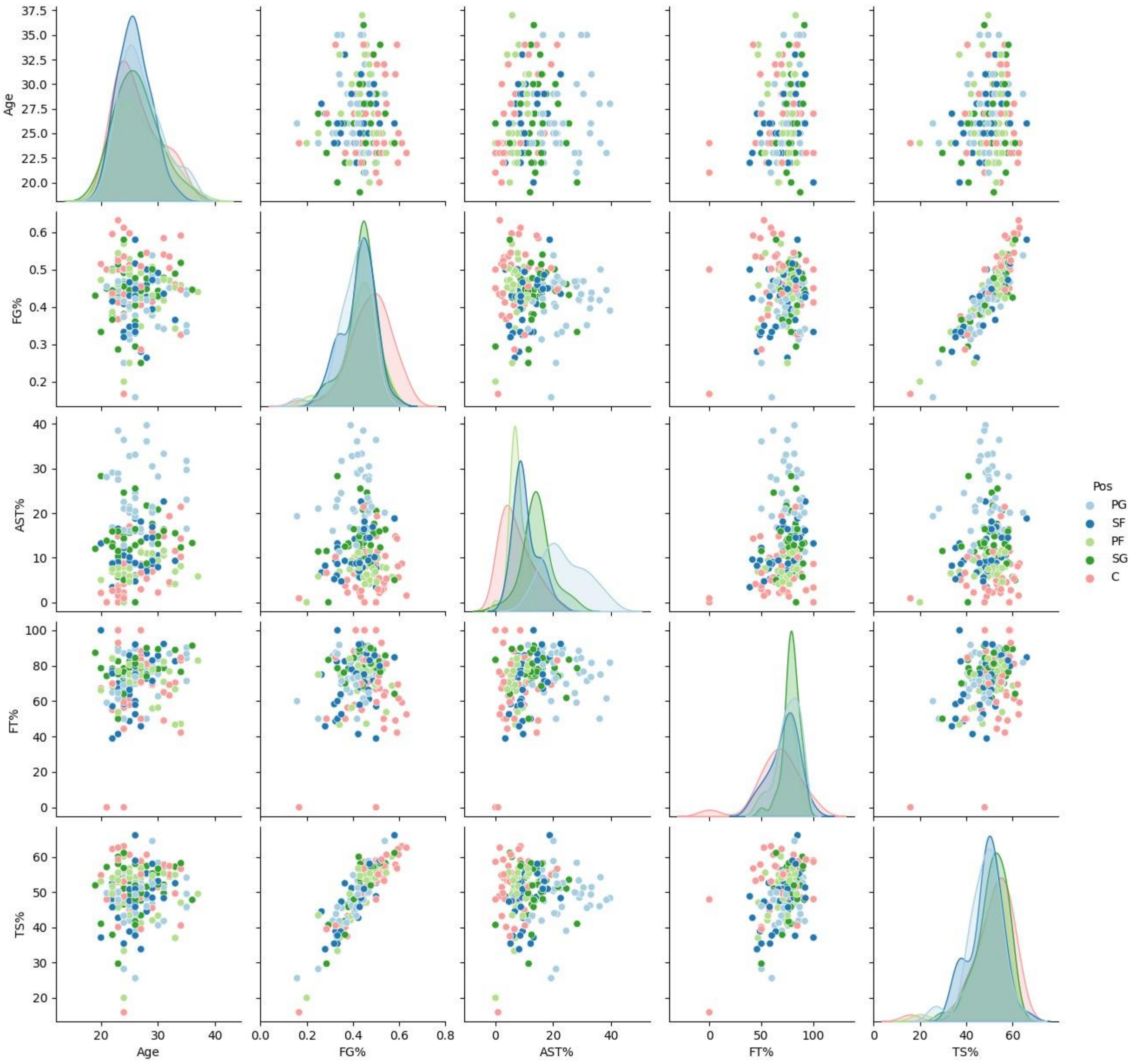
```
import seaborn as sns nba['FT%'] = nba['FT%'] * 100 plot =
sns.relplot(data=nba, x='FT%', y='STL%', hue='Pos', marker='s',
palette='Paired') plot.set_axis_labels('FT% - Free Throw Percentage', 'STL% -
Steal Percentage') plot.fig.suptitle('FT% vs STL% by Position') plt.show()
```



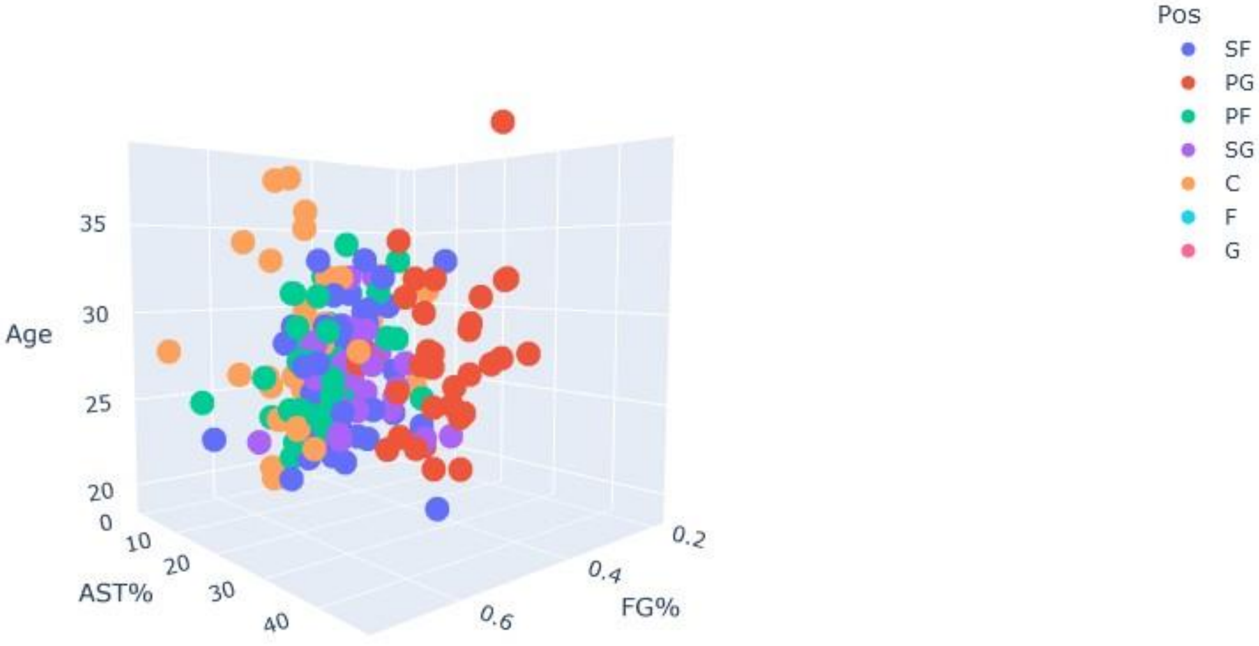
```
  nba['TS%'] = nba['TS%'] * 100 plot = sns.lmplot(data=nba, x='TS%', y='AST%',
hue='Pos', palette='Paired') plot.set_axis_labels('TS% - True Shooting
Percentage', 'AST% - Assist Percentage') plot.fig.suptitle('TS% vs AST% por
posição') plt.show()
```



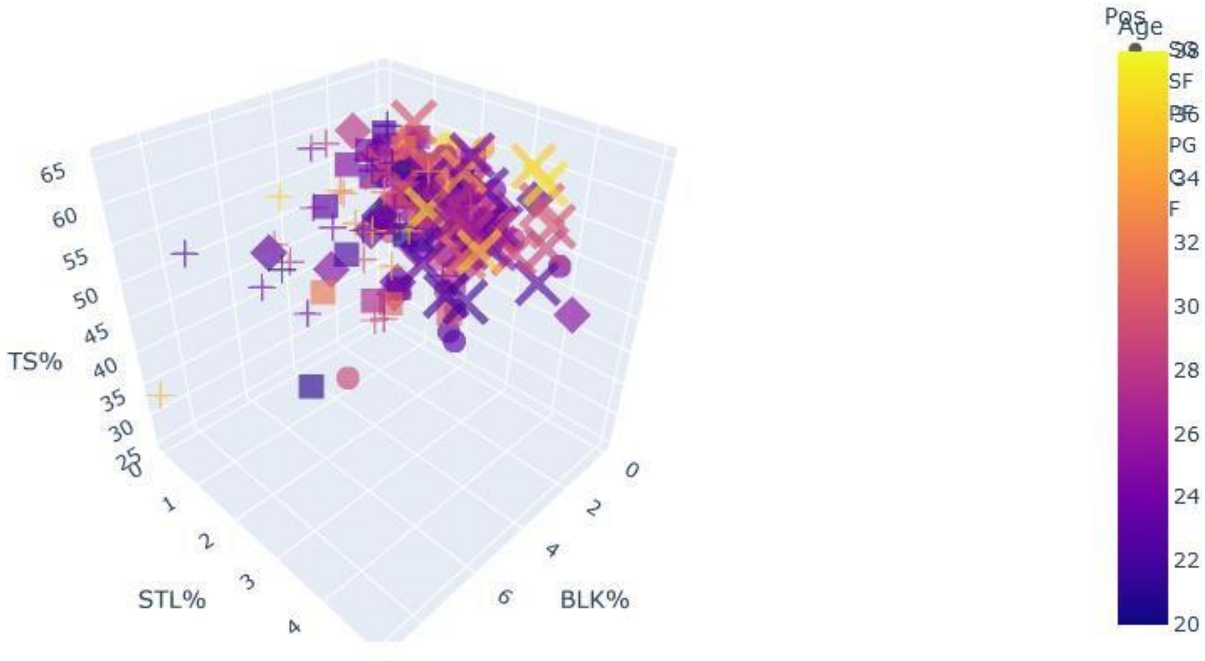
```
  cols = ['Age', 'FG%', 'AST%', 'Pos', 'FT%', 'TS%'] nba
= nba[cols] sns.pairplot(data = nba, hue = 'Pos', palette
= 'Paired')
```



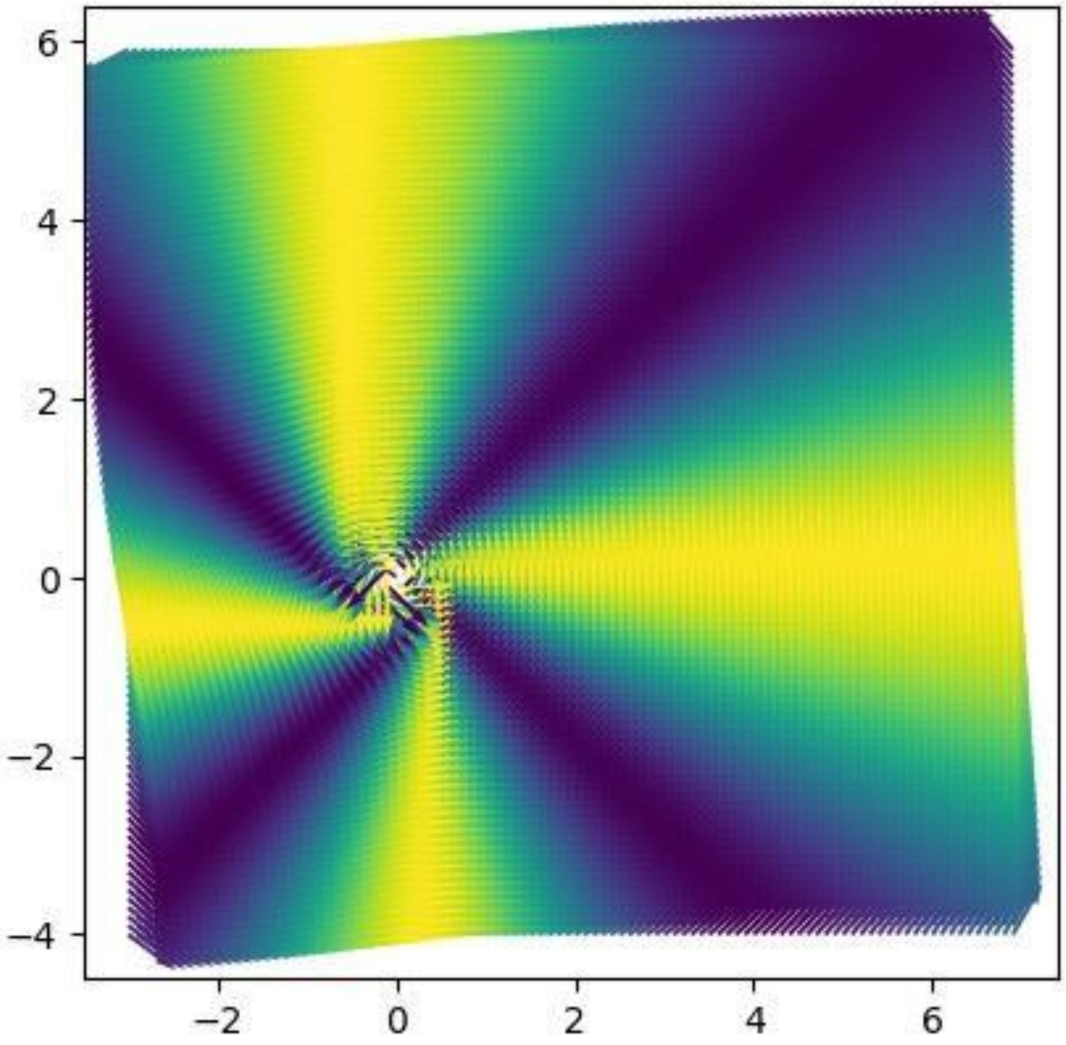
```
import plotly.express as px
 fig = px.scatter_3d(nba, x = 'FG%', y = 'AST%', z = 'Age', color =
'Pos') fig.show()
```



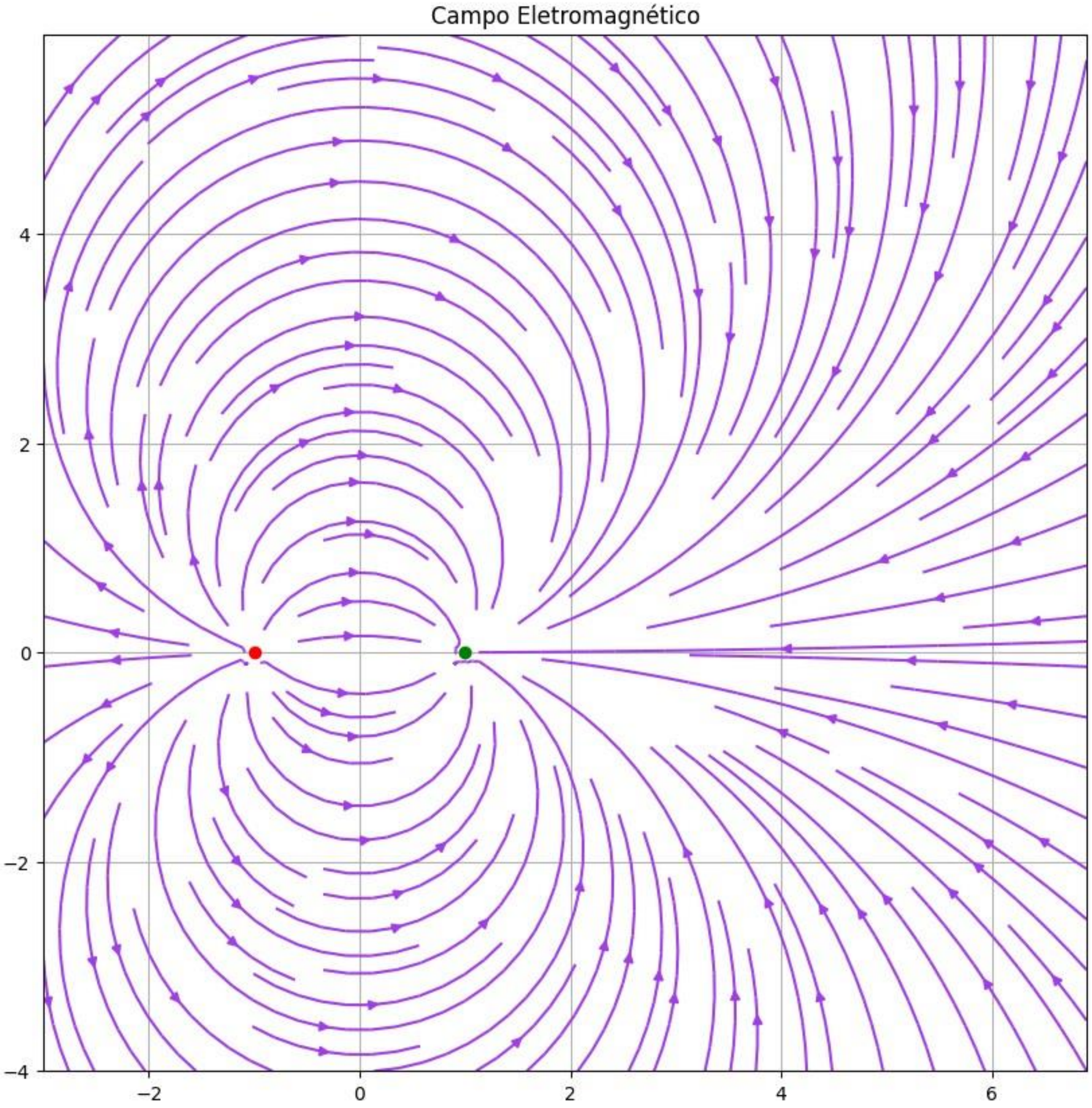
```
fig = px.scatter_3d(nba, x = 'BLK%', y = 'STL%', z = 'TS%', color = 'Age', symbol
= 'Pos', opacity = 0.65)
fig.show()
```



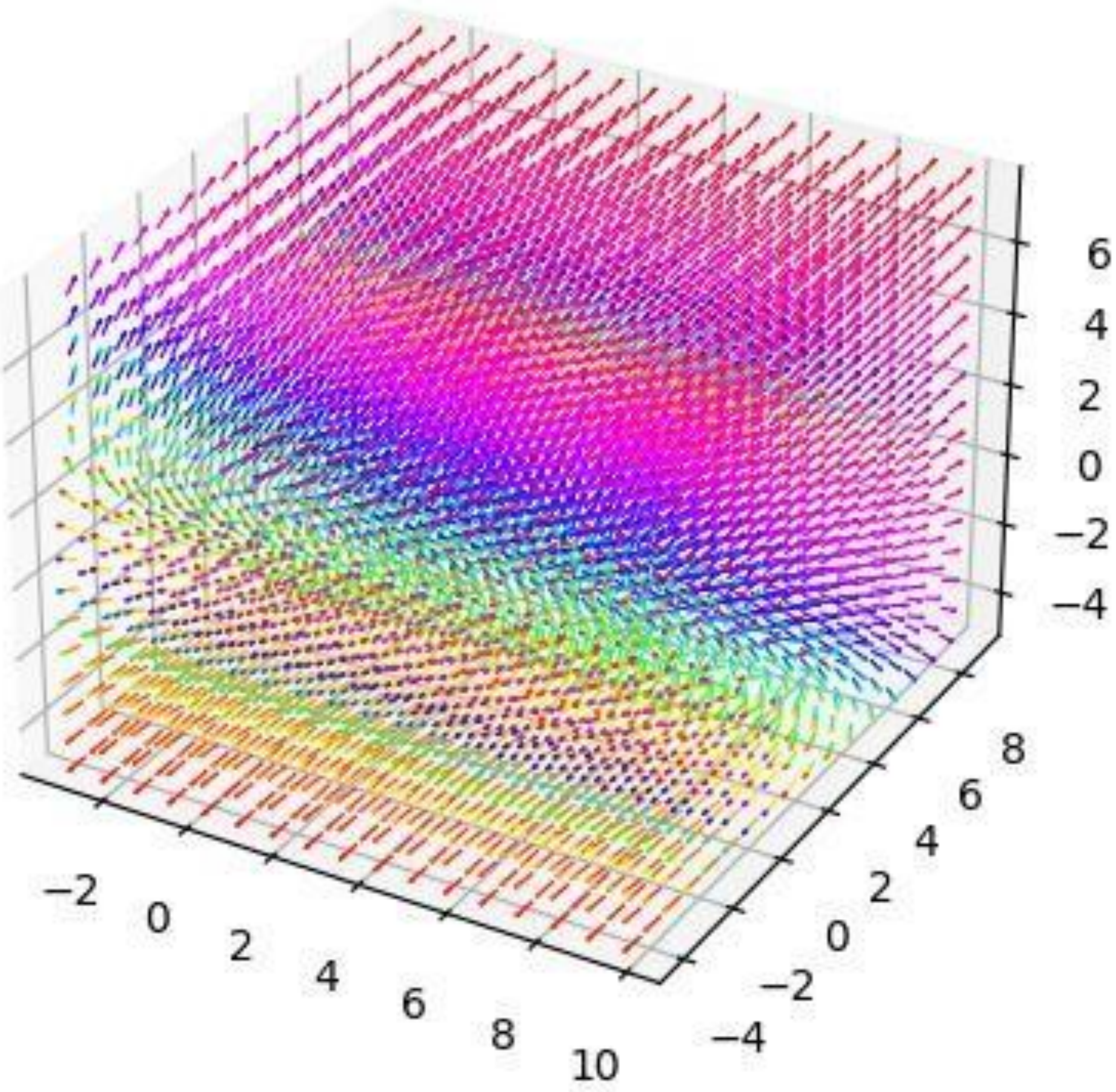
```
X, Y = np.meshgrid(np.arange(-3,7,0.1),np.arange(-4,6,0.1))
U = -Y/np.hypot(X, Y)
V = X/np.hypot(X, Y) M = np.hypot(U**6, V**6) fig, ax
  = plt.subplots()
Q = ax.quiver(X, Y, U, V, M, units = 'xy', width = 0.05, scale = 1.5)
ax.set_aspect('equal', 'box')
```



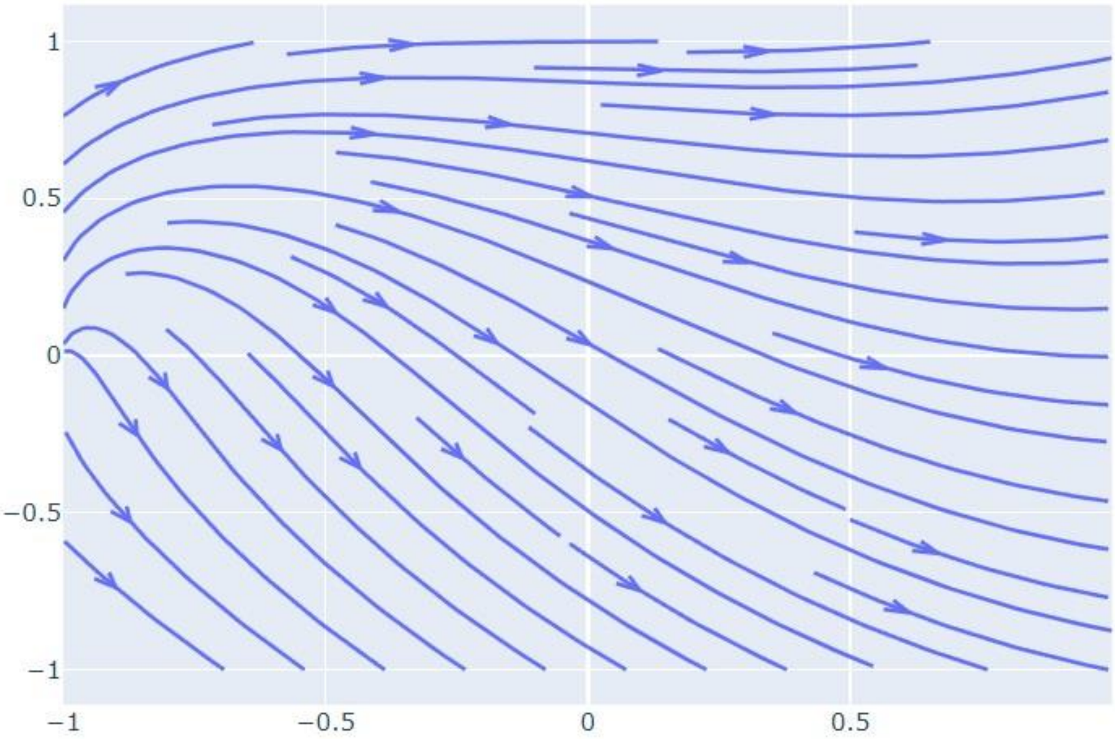
```
Ex = (X + 1)/((X+1)**2 + Y**2) - (X - 1)/((X-1)**2 + Y**2)
Ey = Y/((X+1)**2 + Y**2) - Y/((X-1)**2 + Y**2)
   plt.figure(figsize=(10, 10))  plt.streamplot(X,Y,Ex,Ey, density=1.4,
linewidth=None, color='#A23BEC')  plt.plot(-1,0,'-or')  plt.plot(1,0,'-
og')  plt.title('Campo Eletromagnético')  plt.grid()
plt.show()
```



```
ax = plt.figure().add_subplot(projection = '3d') x, y, z = np.meshgrid(np.arange(-
3,10,.8), np.arange(-4,9,.8), np.arange(-5,8,.8)) u = x - z v = y + z w = z + 1
cor = np.arcsinh(v, u) cor = (cor.flatten() - cor.min()) / cor.ptp() cor =
plt.cm.hsv(cor) a = ax.quiver(x, y, z, u, v, w, length = 0.5, normalize = True,
colors = cor, lw = .8)
plt.show()
```



```
import plotly.figure_factory as ff
 x = np.linspace(-1, 1,
10) y = np.linspace(-1, 1,
10) Y, X = np.meshgrid(x,
y) u = 1 - X**2 + Y v = -1
+ X - Y**2
 fig = ff.create_streamline(x, y, u, v, arrow_scale =
0.05) fig.show()
```


1
0.5
0
−0.5
−1
−1
−0.5
0
0.5