# Lab04

October 12, 2016

In [52]:
```
# -*- coding: utf-8 -*-
import pandas
import matplotlib
import matplotlib.pyplot as plt
import numpy as np
import matplotlib.animation as animation

%matplotlib inline
```

In [53]:
```
# Usd=25.00E+0V
transfer2 = pandas.read_csv('transfer-t2-g13-cleaned.csv', sep=',')

# Usg=4.40E+0V Usg=4.47E+0V Usg=4.54E+0V Usg=4.62E+0V Usg=4.69E+0V Usg=4.
output2 = pandas.read_csv('output-t2-g13-cleaned.csv', sep = ',')
```

### 0.1 Antrojo tranzistoriaus perdavimo/išėjimo charakteristikos

In [54]:
```
transfer2.head(5)
```

Out[54]:

| | Usg (V) | Isd (I) |
|---|---|---|
| 0 | 4.00000 | 0.000056 |
| 1 | 4.00838 | 0.000060 |
| 2 | 4.01677 | 0.000065 |
| 3 | 4.02515 | 0.000069 |
| 4 | 4.03354 | 0.000074 |

In [55]:
```
output2.head(5)
```

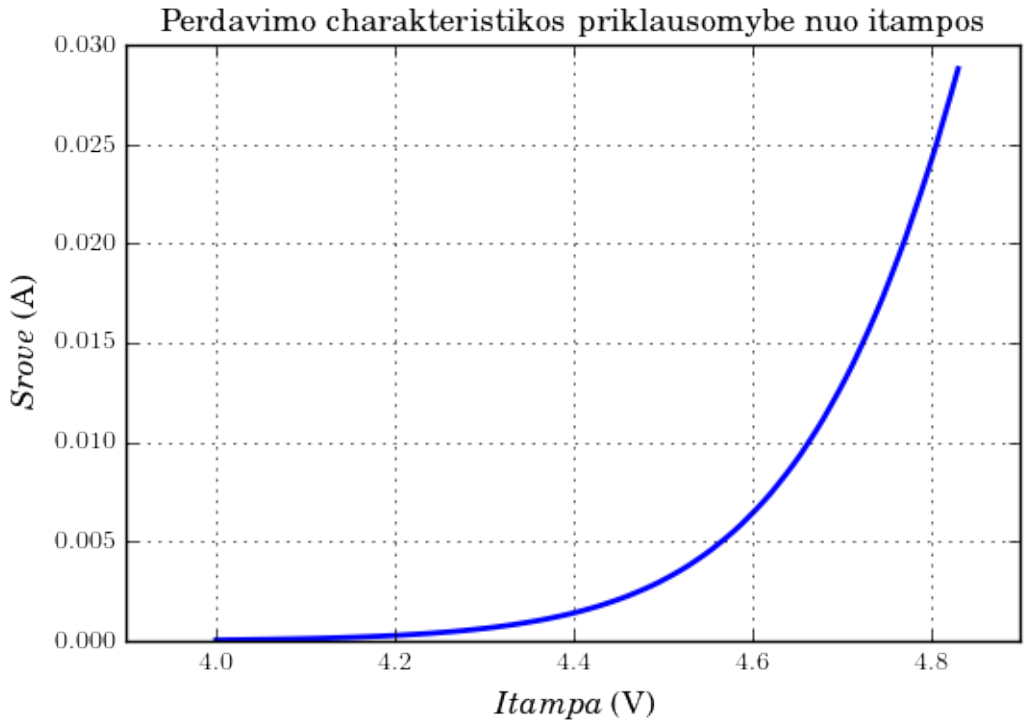
Out[55]:

| | Usd (V) | Isd1 (A) | Isd2 (A) | Isd3 (A) | Isd4 (A) | Isd5 (A) | Isd6 (A) | \ |
|---|---|---|---|---|---|---|---|---|
| 0 | 0.000000 | 0.000002 | 0.000002 | 0.000003 | 0.000003 | 0.000004 | 0.000002 | |
| 1 | 0.012626 | 0.000303 | 0.000449 | 0.000620 | 0.000793 | 0.000002 | 0.000003 | |
| 2 | 0.025253 | 0.000532 | 0.000811 | 0.001158 | 0.001522 | 0.001853 | 0.002116 | |
| 3 | 0.037879 | 0.000700 | 0.001098 | 0.001615 | 0.002184 | 0.002712 | 0.003134 | |
| 4 | 0.050505 | 0.000821 | 0.001316 | 0.001992 | 0.002774 | 0.003523 | 0.004123 | |

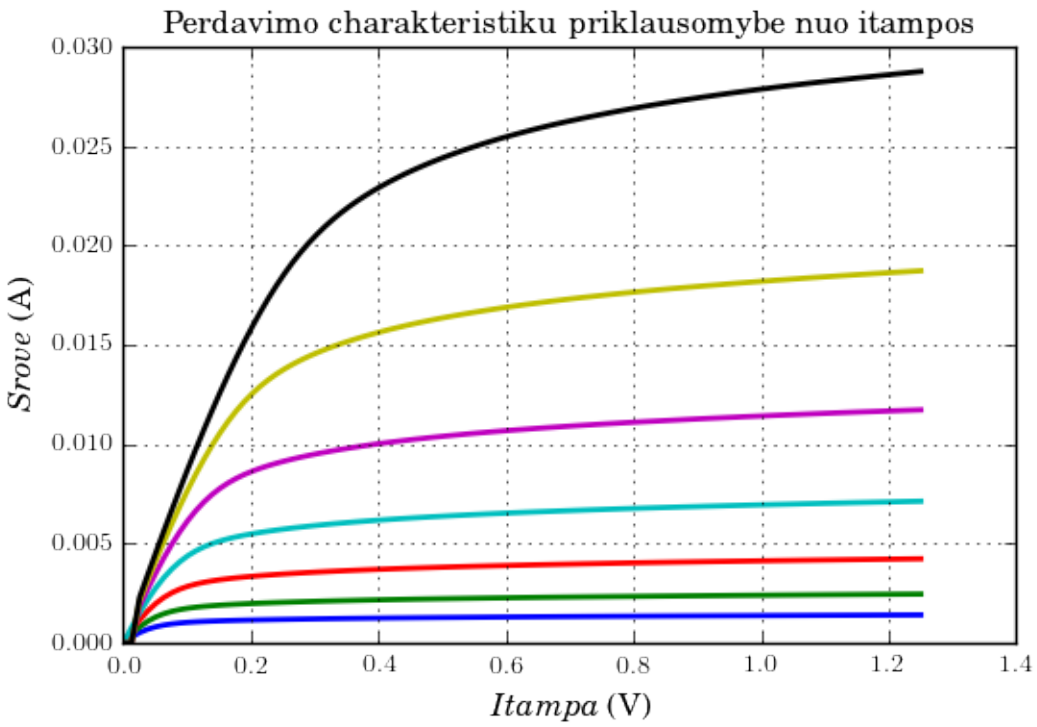
| | Isd7 (A) |
|---|---|
| 0 | 0.000002 |
| 1 | 0.000002 |

```
2   0.002301
3   0.003427
4   0.004536
```

In [65]:
```
fig = plt.figure()

# Allows to render graph data in latex
plt.rc('text', usetex=True)
plt.rc('font', family='DejaVu Sans')

# figure yra pats grafikas be duomenu axes yra kreives kurias piesiame
axes = fig.add_subplot(111)
axes.grid()
axes.plot(transfer2['Usg (V)'],
          transfer2['Isd (I)'],
          color = "blue",
          linestyle = "-",
          linewidth = 2,
          markersize = 9)


axes.set_title('Perdavimo charakteristikos priklausomybe nuo itampos', for
axes.set_ylabel(r'\textit{Srove} (A)',fontsize=12)
axes.set_xlabel(r'\textit{Itampa} (V)',fontsize=12)

plt.savefig('transfer-t1.png')
```



In [70]:
```
fig2 = plt.figure()

# Allows to render graph data in latex
plt.rc('text', usetex=True)
plt.rc('font', family='DejaVu Sans')

# figure yra pats grafikas be duomenu axes yra kreives kurias piesiame
axes = fig2.add_subplot(111)
axes.grid()


x = output2[output2.columns[0]]
y = output2[output2.columns[1]]
title = 'Perdavimo charakteristiku priklausomybe nuo itampos'
x_label = r'\textit{Itampa} (V)'
y_label = r'\textit{Srove} (A)'

for i in range(1, 8):
    x = output2[output2.columns[0]]
    y = output2[output2.columns[i]]
    axes.plot(x, y,linestyle = "-", linewidth = 2, markersize = 9)


axes.set_title(title, fontsize=12)
axes.set_xlabel(x_label,fontsize=12)
axes.set_ylabel(y_label,fontsize=12)

plt.savefig('output-t2.png')
```


Perdavimo charakteristiku priklausomybe nuo itampos
0.030
0.025
0.020
0.015
0.010
0.005
0.000
Srove (A)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
Itampa (V)

In [ ]: