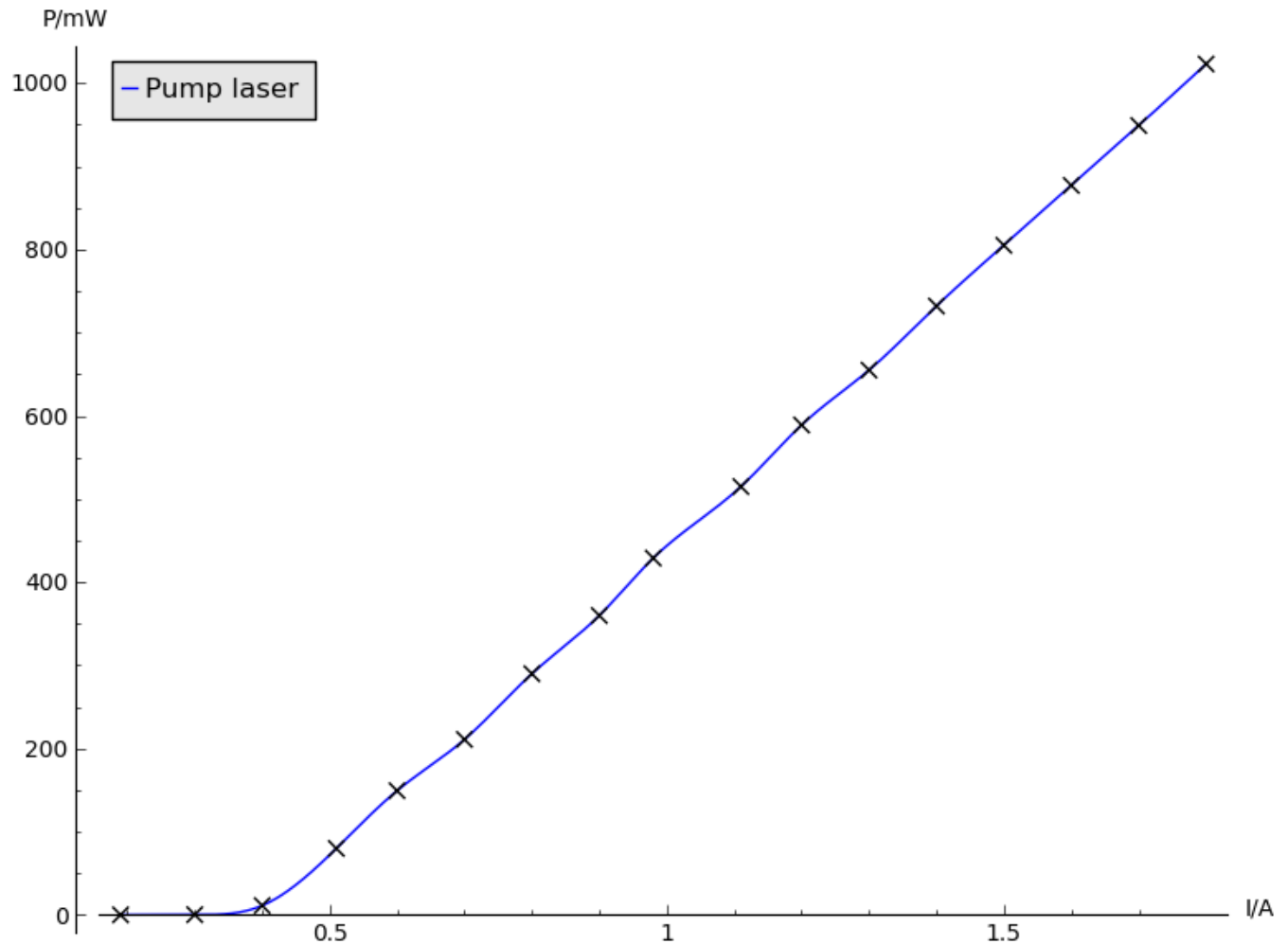


Expr

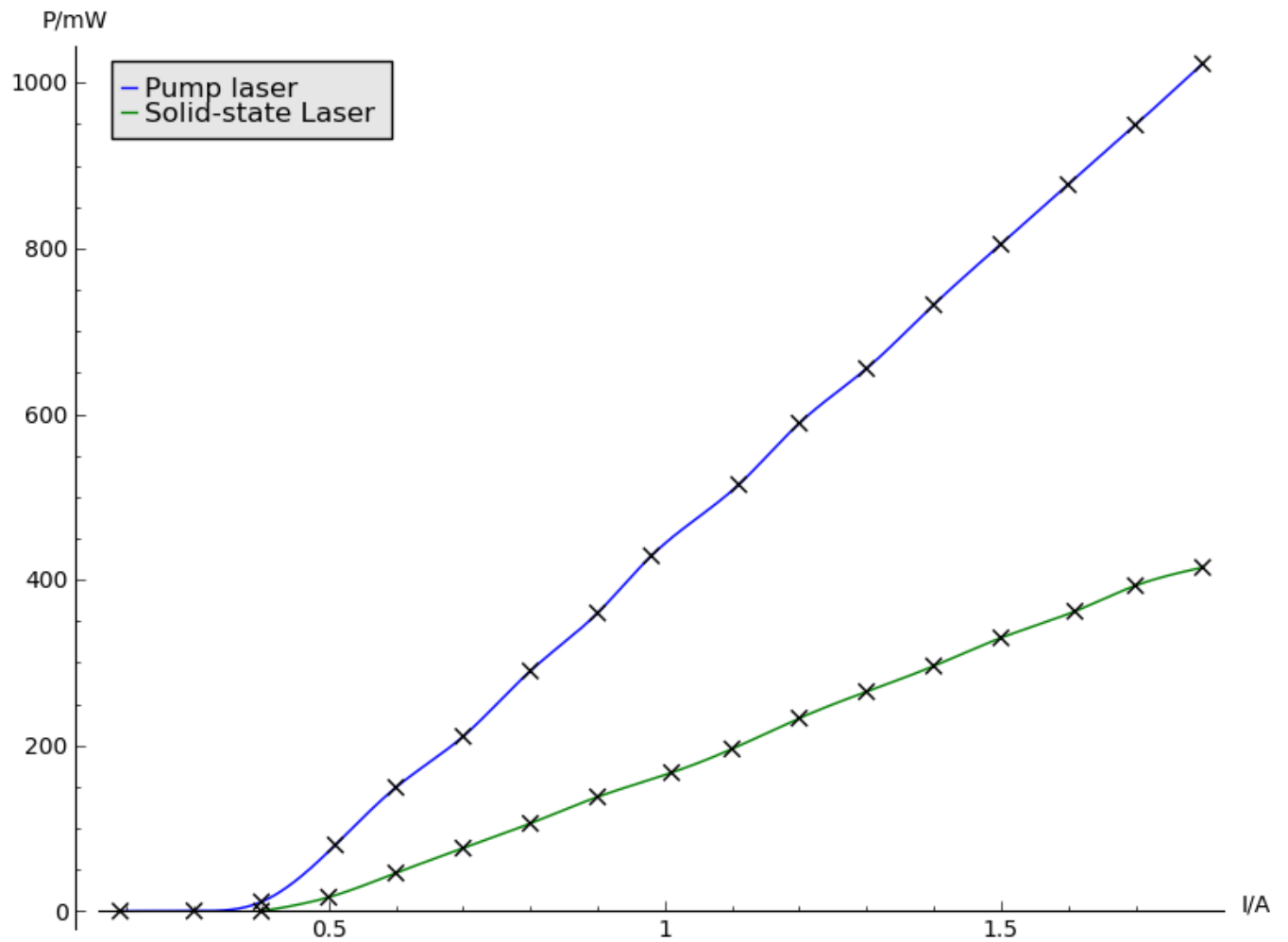
```
I1 =  
[0.19,0.30,0.40,0.51,0.60,0.70,0.80,0.90,0.98,1.11,1.20,1.30,1.40,1.50,1.60,1.70,1.80]  
  
P1 = [0.17,0.39,11.33,80.0,149.4,211,290,360,429,515,589,655,732,805,877,949,1023]  
f1 = spline(zip(I1,P1))
```

```
plot1 = plot(f1,xmin=0.19,xmax=1.80,axes_labels = ["I/A", "P/mW"],  
legend_label="Pump laser") + scatter_plot(zip(I1,P1),marker = "x")  
plot1
```



```
I2 = [0.40,0.50,0.60,0.70,0.80,0.90,1.01,1.10,1.20,1.30,1.40,1.50,1.61,1.70,1.80]  
P2 = [0.0,16.90,46.1,76.1,106.0,138.0,167.3,195.9,233,265,296,330,362,393,415]  
f2 = spline(zip(I2,P2))
```

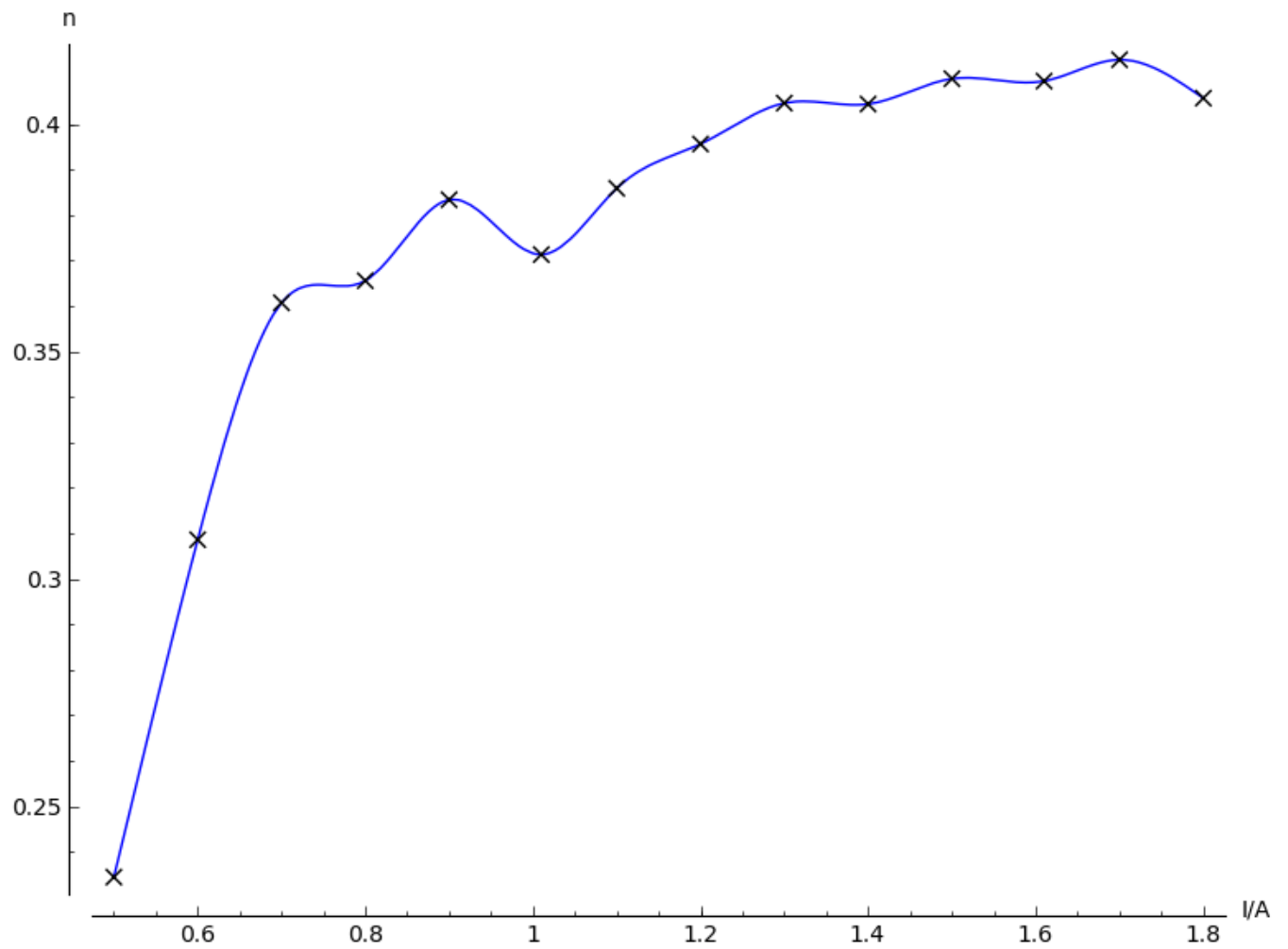
```
plot1 += plot(f2,xmin=0.40,xmax=1.80,axes_labels = ["I/A", "P/mW"],  
color="green",legend_label="Solid-state Laser") + scatter_plot(zip(I2,P2),marker =  
"x")  
plot1
```



```
n2 = map(lambda x: x[1]/f1(x[0]), zip(I2,P2)[1:])
n2
```

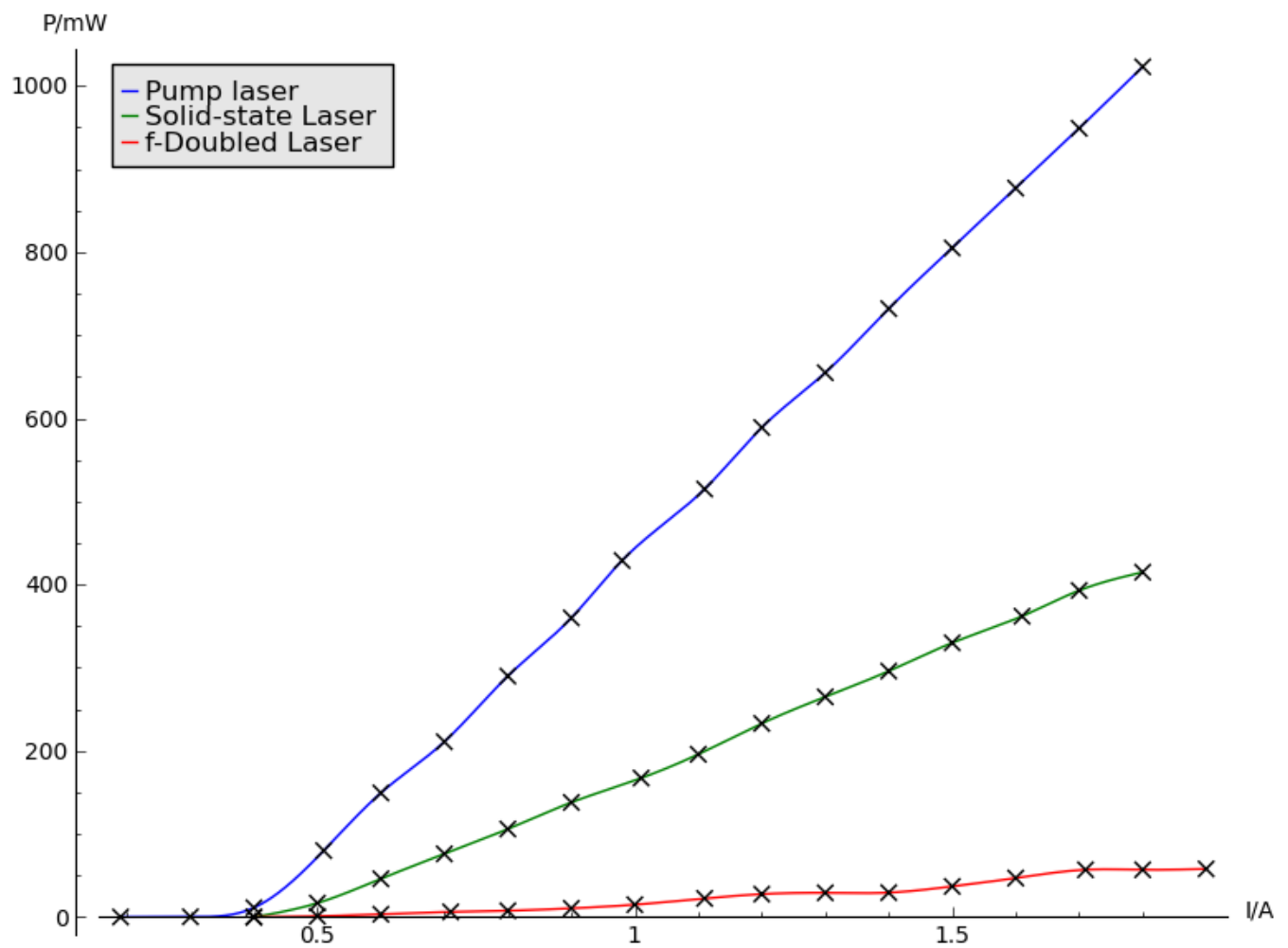
```
[0.234371855303025, 0.308567603748327, 0.360663507109005,
0.365517241379310, 0.383333333333333, 0.371266015832563,
0.385840657713961, 0.39558573853989815, 0.40458015267175573,
0.40437158469945356, 0.40993788819875776, 0.40941606640010586,
0.41412012644889357, 0.4056695992179863]
```

```
fn2 = spline(zip(I2[1:],n2))
plot2 = plot(fn2,xmin=I2[1],xmax=I2[-1],axes_labels = ["I/A", "n"]) +
scatter_plot(zip(I2[1:],n2),marker = "x")
plot2
```

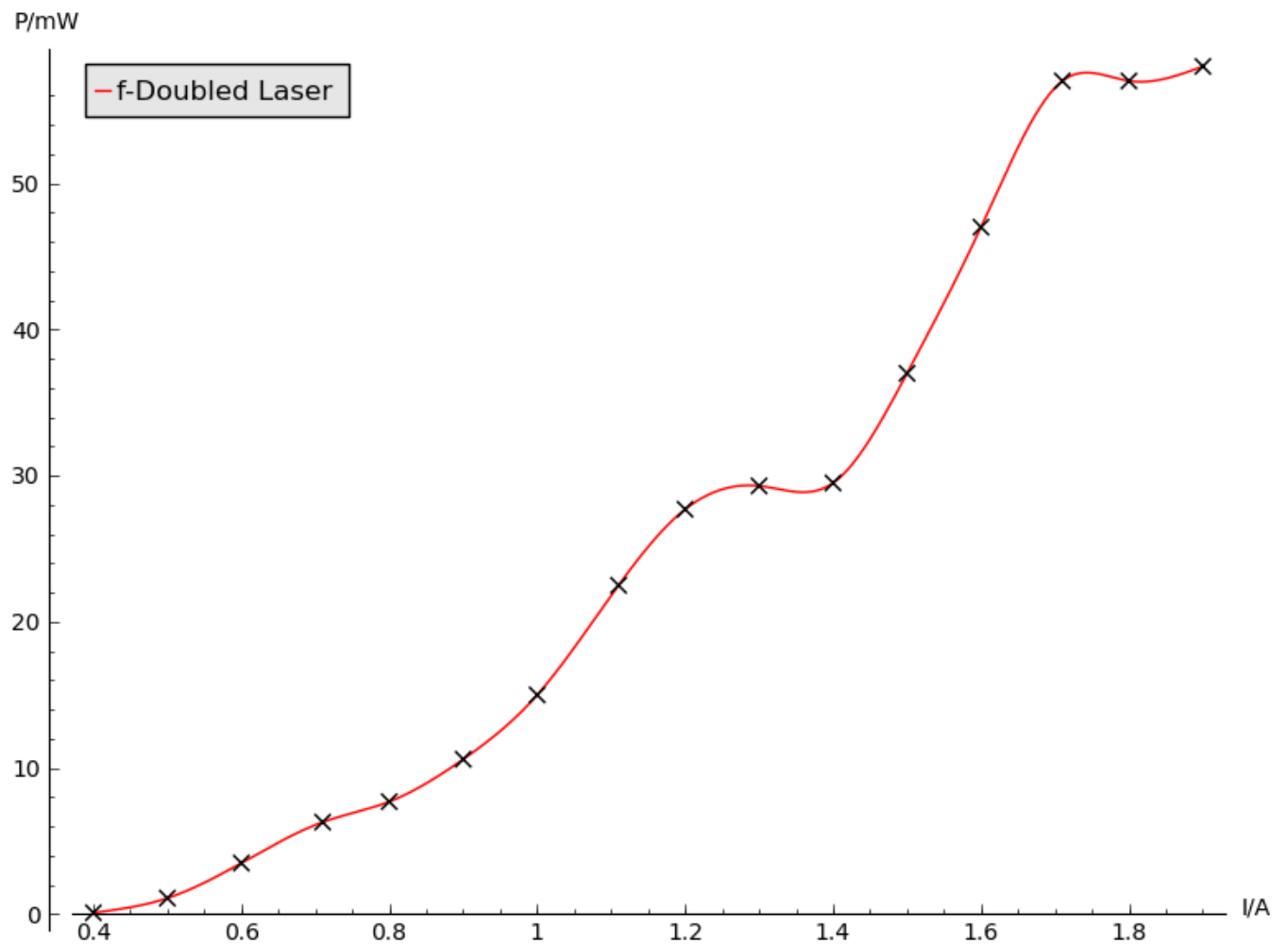


```
I3 = [0.4,0.5,0.6,0.71,0.80,0.90,1.00,1.11,1.20,1.30,1.40,1.50,1.60,1.71,1.80,1.90]
P3=[0.1,1.1,3.5,6.3,7.7,10.6,15.0,22.5,27.7,29.3,29.5,37.0,47.0,57.0,57.0,58.0]
f3 = spline(zip(I3,P3))
```

```
plot1 += plot(f3,xmin=0.40,xmax=1.90,axes_labels = ["I/A", "P/mW"],
color="red",legend_label="f-Doubled Laser") + scatter_plot(zip(I3,P3),marker = "x")
plot1
```



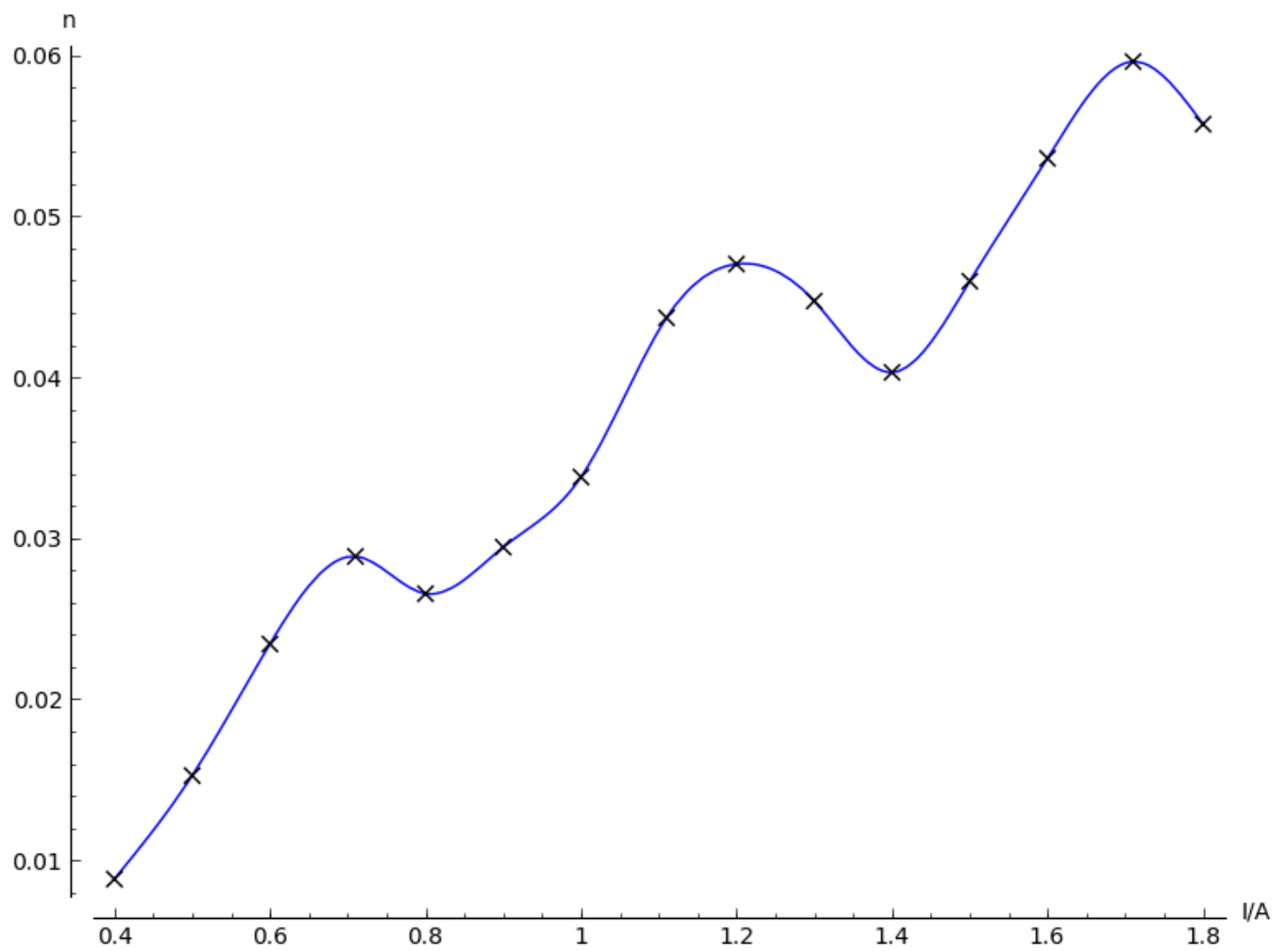
```
plot3 = plot(f3,xmin=0.40,xmax=1.90,axes_labels = ["I/A", "P/mW"],
color="red",legend_label="f-Doubled Laser") + scatter_plot(zip(I3,P3),marker = "x")
plot3
```



```
n3 = map(lambda x: x[1]/f1(x[0]), zip(I3,P3)[: -1])
n3
```

```
[0.00882612533097970, 0.0152549728303744, 0.0234270414993307,
0.0288692569632041, 0.0265517241379310, 0.0294444444444444,
0.0337981534172038, 0.0436893203883495, 0.0470288624787776,
0.0447328244274809, 0.0403005464480874, 0.0459627329192547,
0.0535917901938426, 0.0596044716093937, 0.0557184750733138]
```

```
fn3 = spline(zip(I3[: -1],n3))
plot4 = plot(fn3,xmin=I3[0],xmax=I3[-2],axes_labels = ["I/A", "n"]) +
scatter_plot(zip(I3[: -1],n3),marker = "x")
plot4
```



```
plot1.save("plot1.pdf")
```

[plot1.pdf](#)

```
plot2.save("plot2.pdf")
```

[plot2.pdf](#)

```
plot3.save("plot3.pdf")
```

[plot3.pdf](#)

```
plot4.save("plot4.pdf")
```

[plot4.pdf](#)