In[1]:=
```
SetDirectory["/Users/danikaluntz-martin/Desktop/Advanced Lab/DoubleSlit-ED"];
counts3 = Import["20141122_double_slit_bulb_counts3.csv"];
counts3;
```

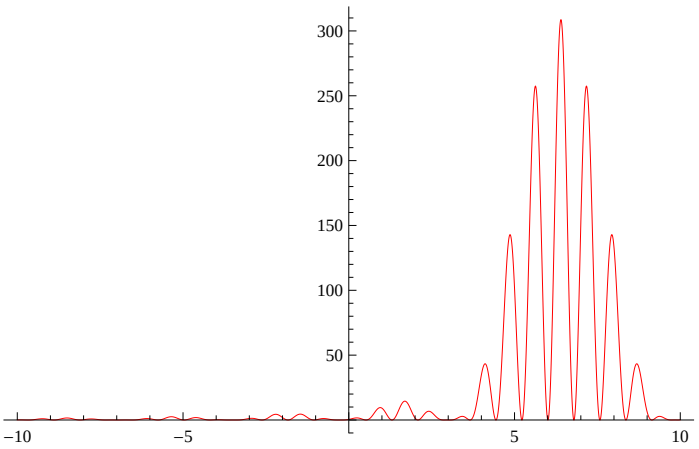
In[4]:=
```
θ = (x - x0) / R;
α = π * a * Sin[θ] / λ;
β = π * d * Sin[θ] / λ;

i2 = i0 * (Sinc[α])^2 * Cos[β]^2;
```

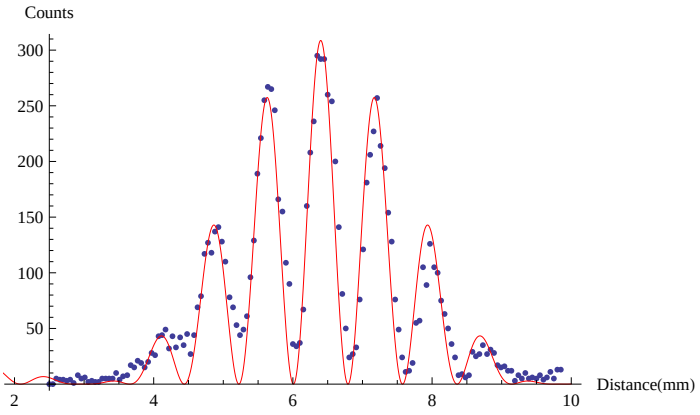
In[8]:=
```
x0 = 6.4;
a = 0.09;
d = 0.383;
R = 550;
λ = .000546;
```

In[19]:=
```
fit3 = NonlinearModelFit[counts3, i2, i0, x];
Normal[fit3];
plot3 = Plot[fit3[x], {x, -10, 10}, PlotRange → All, PlotStyle → Red]
Show[ListPlot[counts3], plot3,
 PlotRange → {{2, 10}, All}, AxesLabel → {Distance [mm], Counts}]
```

Out[21]=



Out[22]=



In[17]:=
$$\text{ChiSq3} = \sum_{j=1}^{146} \left(\frac{\text{fit3["FitResiduals"][[j]]}}{2\left(\sqrt{\text{counts3[[j, 2]]}} - \sqrt{1.68}\right)} \right)^2$$

```
RedChiSq3 = ChiSq3 / 7
```

Out[17]= 855.847

Out[18]= 122.264