In[1]:=
```
SetDirectory["/Users/danikaluntz-martin/Desktop/Advanced Lab/DoubleSlit-ED"];
counts1 = Import["2014_double_slit_bulb_counts.csv"];
counts1;
```

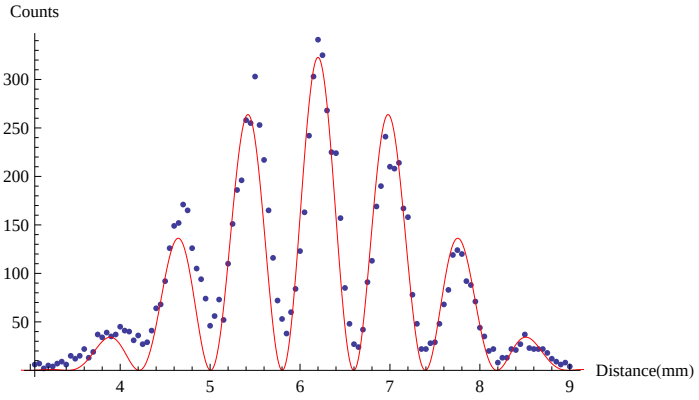
In[4]:=
```
θ = (x - x0) / R;
α = π * a * Sin[θ] / λ;
β = π * d * Sin[θ] / λ;

i2 = i0 * (Sinc[α])^2 * Cos[β]^2;
```

In[8]:=
```
x0 = 6.2;
a = 0.085;
d = 0.343;
R = 500;
λ = .000546;
```

In[13]:=
```
fit1 = NonlinearModelFit[counts1, i2, {i0}, x];
plot1 = Plot[fit1[x], {x, -10, 10}, PlotRange → All, PlotStyle → Red];
Show[ListPlot[counts1], plot1, AxesLabel → {Distance [mm], Counts}]
```

Out[15]=



In[16]:=
$$\text{ChiSq} = \sum_{j=1}^{120} \left(\frac{\text{fit1["FitResiduals"][[j]]}}{2\left(\sqrt{\text{counts1[[j, 2]]}} - \sqrt{1.68}\right)} \right)^2$$

```
RedChiSq = ChiSq / 7
```

Out[16]= 510.333

Out[17]= 72.9047