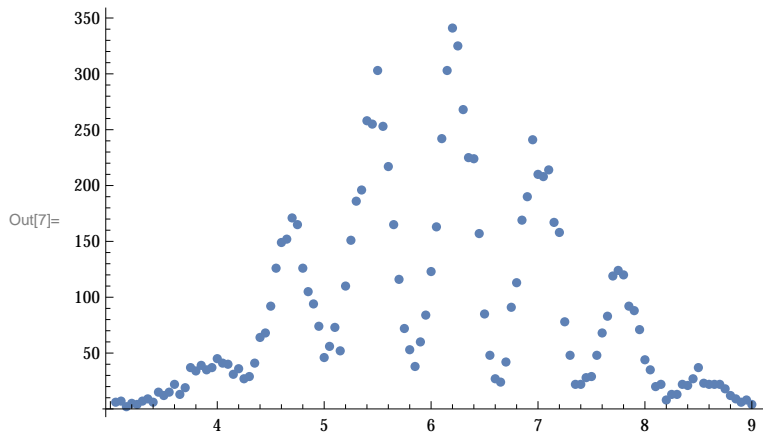```
SetDirectory["/Users/danikaluntz-martin/Desktop/Advanced Lab/DoubleSlit-ED"];
counts1 = Import["2014_double_slit_bulb_counts.csv"];
counts1;
```

```
ListPlot[counts1]
```

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

i₂ = i0 * (Sinc[α])² * Cos[β]²;
```
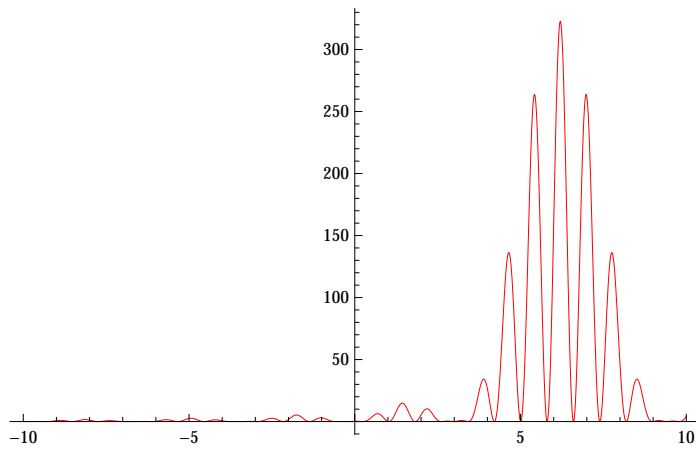
$i_2 = i0 * (\text{Sinc}[\alpha])^2 * \text{Cos}[\beta]^2;$

```
x0 = 6.2;
a = 0.085;
d = 0.343;
R = 500;
λ = .000546;
```
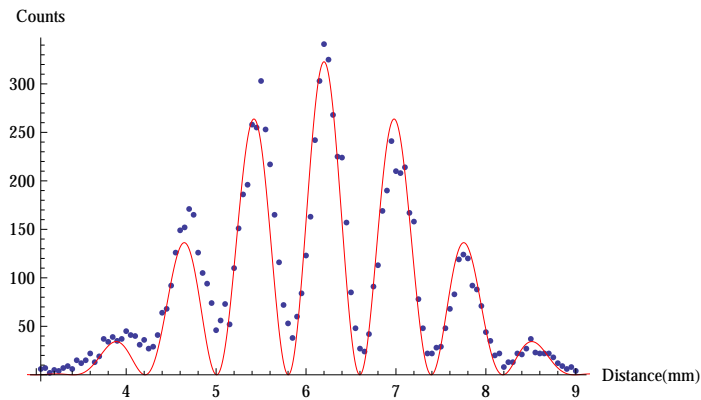
In[132]:= `fit1 = NonlinearModelFit[counts1, i₂, {i0}, x];`
`plot1 = Plot[fit1[x], {x, -10, 10}, PlotRange → All, PlotStyle → Red]`
`Show[ListPlot[counts1], plot1, AxesLabel → {Distance [mm], Counts}]`

Out[133]=

Out[134]=

In[100]:= $$\text{ChiSq} = \sum_{j=1}^{120} \left(\frac{\texttt{fit1["FitResiduals"][[j]]}}{2 \left(\sqrt{\texttt{counts1[[j, 2]]}} - \sqrt{1.68} \right)} \right)^2$$

`RedChiSq = ChiSq / 7`

Out[100]= 510.333

Out[101]= 72.9047