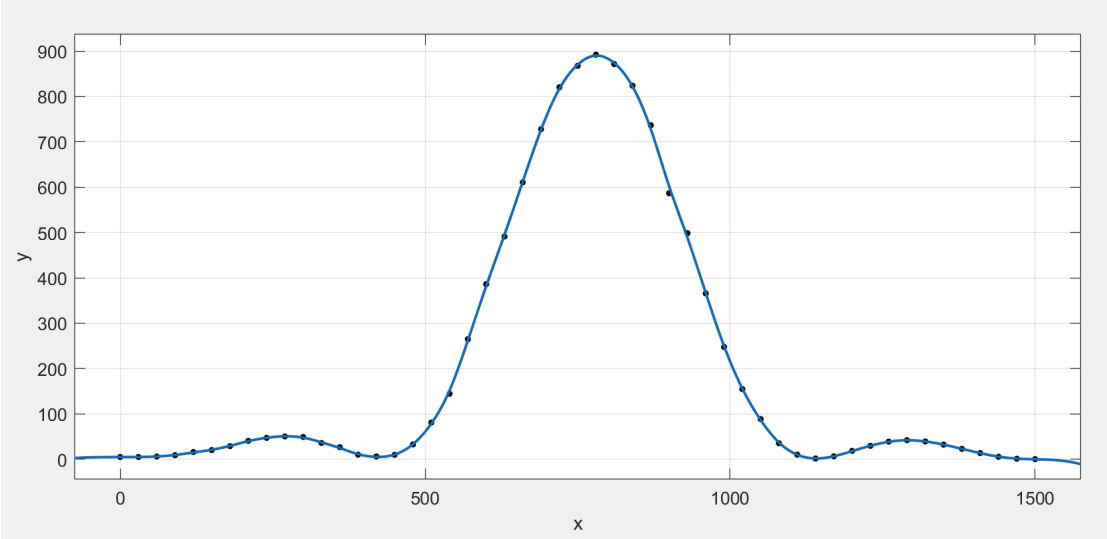
一、用光栅测光的波长并计算相对误差

$$x_1 = 38.660mm, x_2 = 52.213mm, x_3 = 65.550mm$$
$$\Delta x_1 = 13.553mm, \Delta x_2 = 13.337mm \therefore \Delta\bar{x} = 13.445mm$$
$$\because L = 424.5mm, \ \therefore sin\theta \approx \theta \approx 0.0317$$
$$\therefore \lambda \approx 633.45nm$$
$$\because \lambda_0 = 650.0nm, \ \therefore E = \frac{|\lambda_0 - \lambda|}{\lambda_0} \approx 2.55\%$$

二、绘制单缝光强分布图，求单缝宽a



二级明纹中心为（275.3，50.45）、（1290，42.0）

一级明纹中心为（780，892.0）

二级暗纹中心为 422.3，1140

$$\Delta x_1 = 3.6mm, \Delta x_2 = 3.58mm, \ \therefore \Delta\bar{x} = 3.59mm$$
$$sin\theta \approx \theta \approx 0.0085$$
$$\because asin\theta = 1.43\lambda, \ \therefore a \approx 0.1066mm \approx 0.10mm$$

三、验证极值处光强比

$$I_0 \approx 892.0, \ \bar{I_1} = 46.225$$
$$\frac{I_1}{I_0} \approx 5.18\%$$