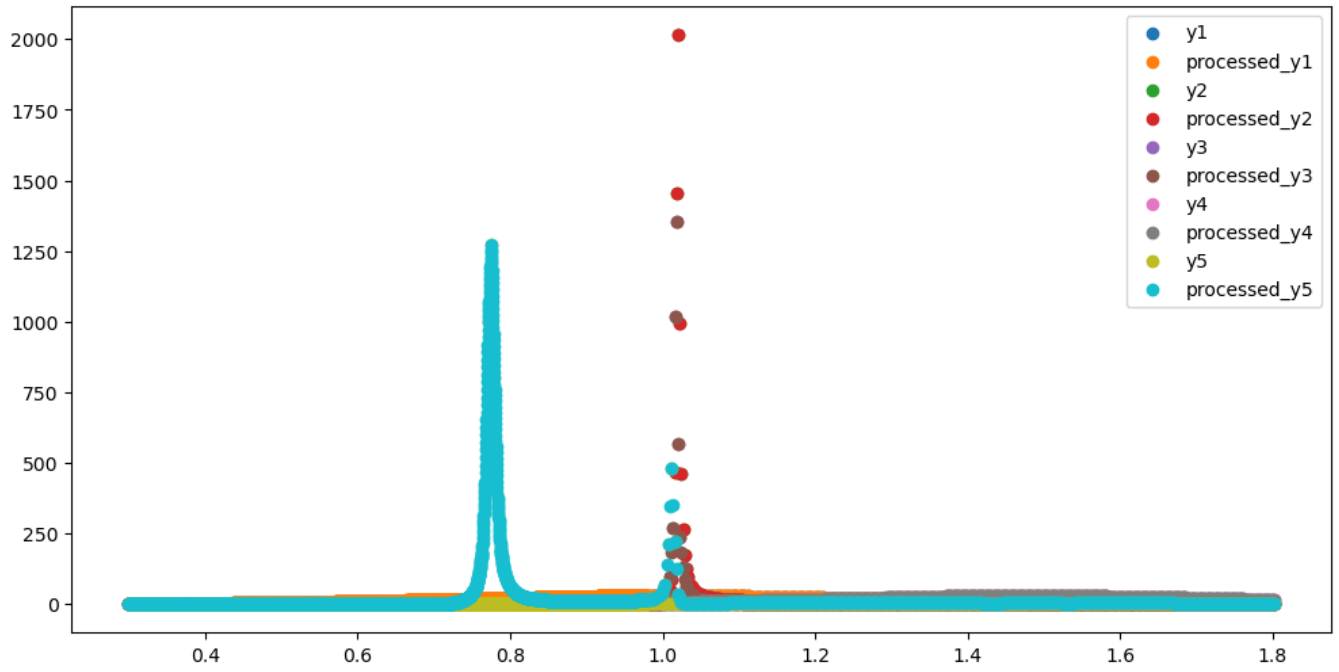
In [ ]:
```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

# 读取CSV文件
file_name = "g-2_all_data.csv"
data = pd.read_csv(file_name, delimiter=',', header=None)

# 为列添加标签
data.columns = ["x0", "y0", "err0", "x1", "y1", "err1", "x2", "y2",
                "err2", "x3", "y3", "err3", "x4", "y4", "err4", "x5", "y5", "err5"]
```

In [ ]:
```python
# 插值y*和err*列
for i in range(6):
    col_name = f"y{i}"
    err_col_name = f"err{i}"
    processed_col_name = f"processed_y{i}"
    processed_err_col_name = f"processed_err{i}"
    data[col_name] = np.where(data[col_name] == 0, np.nan, data[col_name])
    data[err_col_name] = np.where(
        data[err_col_name] == 0, np.nan, data[err_col_name])
    data[processed_col_name] = data[col_name].interpolate()
    data[processed_err_col_name] = data[err_col_name].interpolate()

# give final data
data = data.fillna(0)

# 添加 processed_y 列，为所有 processed_y* 列的总和
data['processed_y'] = data.filter(like='processed_y').sum(axis=1)

# 添加 processed_err 列，为所有 processed_err* 列的平方和的平方根
data['processed_err'] = np.sqrt(data.filter(
    like='processed_err').pow(2).sum(axis=1))


# 创建散点图
plt.figure(figsize=(12, 6))
for i in range(1, 6):
    col_name = f"y{i}"
    processed_col_name = f"processed_y{i}"
    plt.scatter(data["x0"], data[col_name], label=col_name)
    plt.scatter(data["x0"], data[processed_col_name], label=processed_col_name)

# 添加图例
plt.legend()

# 保存散点图
# plt.savefig("scatter_plot.png")

# 显示图形
plt.show()

# 保存处理后的数据
data.to_csv("processed_"+file_name, index=False)
```



In [ ]:
```
data
```

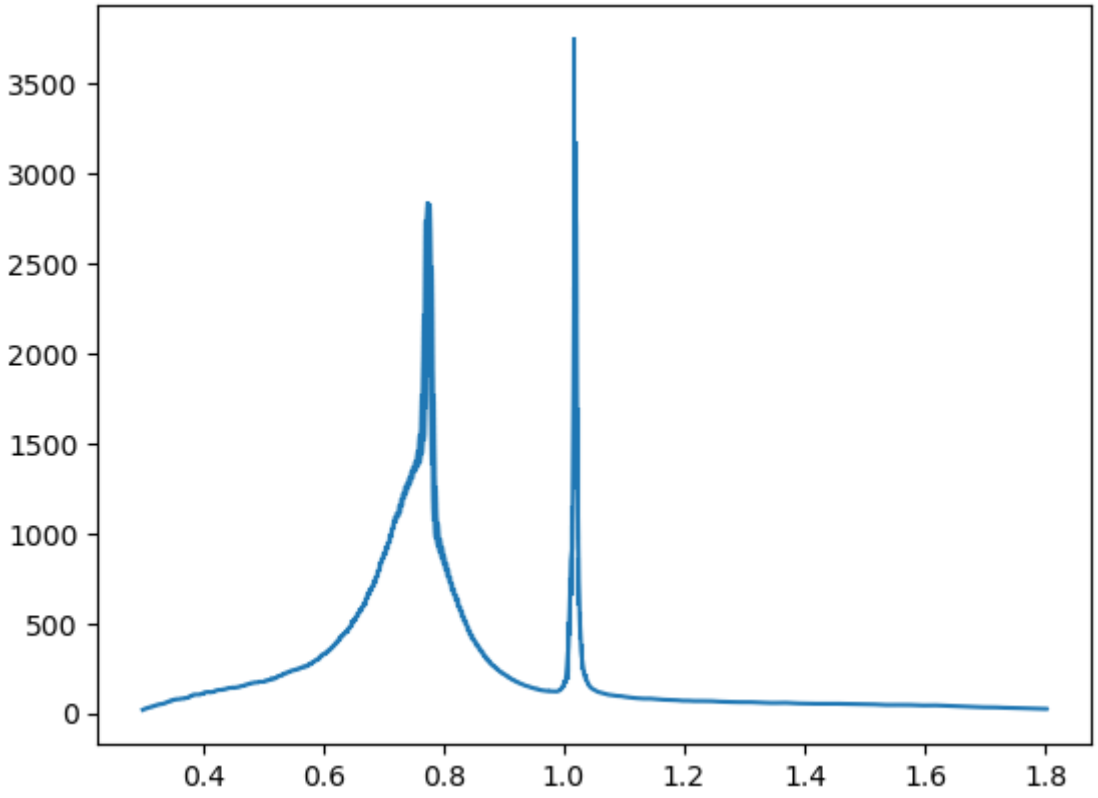
Out[ ]:

	x0	y0	err0	x1	y1	err1	x2	y2	err2	x3	...
0	0.300000	18.415000	5.368521	0.300000	0.00000	0.00000	0.300000	0.000000	0.000000	0.300000	...
1	0.300879	20.204507	7.158027	0.300879	0.00000	0.00000	0.300879	0.000000	0.000000	0.300879	...
2	0.301757	21.994014	5.368521	0.301757	0.00000	0.00000	0.301757	0.000000	0.000000	0.301757	...
3	0.302636	21.994014	5.368521	0.302636	1.15192	0.14768	0.302636	0.000000	0.000000	0.302636	...
4	0.303515	21.994014	5.368521	0.303515	0.00000	0.00000	0.303515	0.000000	0.000000	0.303515	...
...	...	...	...	...	...	...	...	...	...	...	...
1818	1.793445	1.450324	0.244581	1.793445	0.00000	0.00000	1.793445	0.170580	0.021372	1.793445	...
1819	1.795574	1.450324	0.244581	1.795574	6.02536	0.44304	1.795574	0.167513	0.024440	1.795574	...
1820	1.797704	1.450324	0.244581	1.797704	0.00000	0.00000	1.797704	0.163567	0.020494	1.797704	...
1821	1.799833	1.450324	0.244581	1.799833	5.87768	0.44304	1.799833	0.167513	0.024440	1.799833	...
1822	1.801962	1.450324	0.244581	1.801962	0.00000	0.00000	1.801962	0.000000	0.000000	1.801962	...

1823 rows × 32 columns

In [ ]:
```
plt.errorbar(x=data["x0"], y=data["processed_y"], yerr=data["processed_err"])
```

Out[ ]:
```
<ErrorbarContainer object of 3 artists>
```


3500
3000
2500
2000
1500
1000
500
0
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8