

单一闭附合等级导线条件平差程序

Q4V3/H4V3的操作方法

- 1、源程序——图书第4章/第3节
- 主程序——Q4V3
- 没有子程序

• 2、功能

- 采用条件平差原理编写
- 一个闭合或附和导线有3个条件方程——
- 1个方位角条件，2个坐标条件。
- 当机器内存只有Q4V3程序,清空全部串列文件时
- Q4V3程序最多可以对含50个未知点的
- 单一闭合或附和导线进行严密平差计算
- 求出每个未知点的平差坐标及其误差椭圆元素
- 导线等级可以选择：三等,四等,一级,二级,三级

- 计算前，先设置当前串列文件，
- 按坐标推算路线
- 在List 1~List 2串列输入已知导线点坐标
- 在List 3串列输入导线水平角观测值
- 在List 4串列输入导线水平距离观测值

串列 子名	List 1	List 2	List 3	List 4
	$x_0(\text{m})$	$y_0(\text{m})$	$\beta(\text{Deg})$	side(m)
1	已知点 x 坐标	已知点 y 坐标	水平角	边长
2				

• 3、二级附和导线严密平差案例



- 在STAT模式选择File1为当前串列文件
- 在RUN-MAT模式执行ClrList命令清除当前串列

```
Stat Wind      :Auto
Resid List     :List3
List File      :File1
Sub Name       :On
Frac Result    :ab/c
Func Type      :Y=
Graph Func     :On
FILE
```

```
ClrList
Done

Text Grph List Mat
```

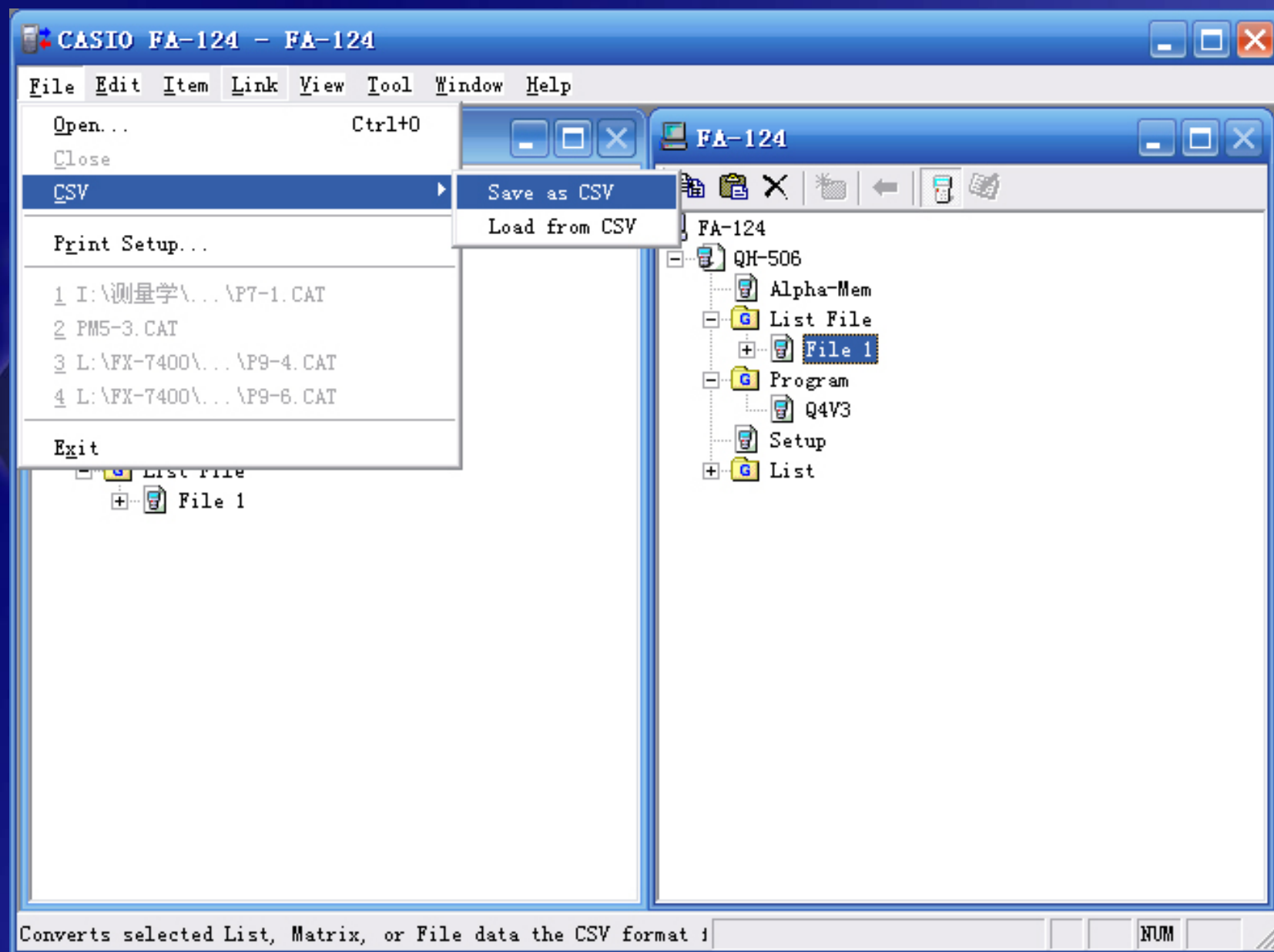
- 输入已知数据与观测数据到List 1~List 4串列

	List 1	List 2	List 3	List 4
SUB				
1	2.5E6	398941	253.95	136.08
2	2.5E6	398744	162.91	161.01
3	2.5E6	399420	198.46	239.51
4	2.5E6	399537	240.09	169.24
5			189.11	132.62
6			191.41	141.05
7			165.51	119.74
8			243	

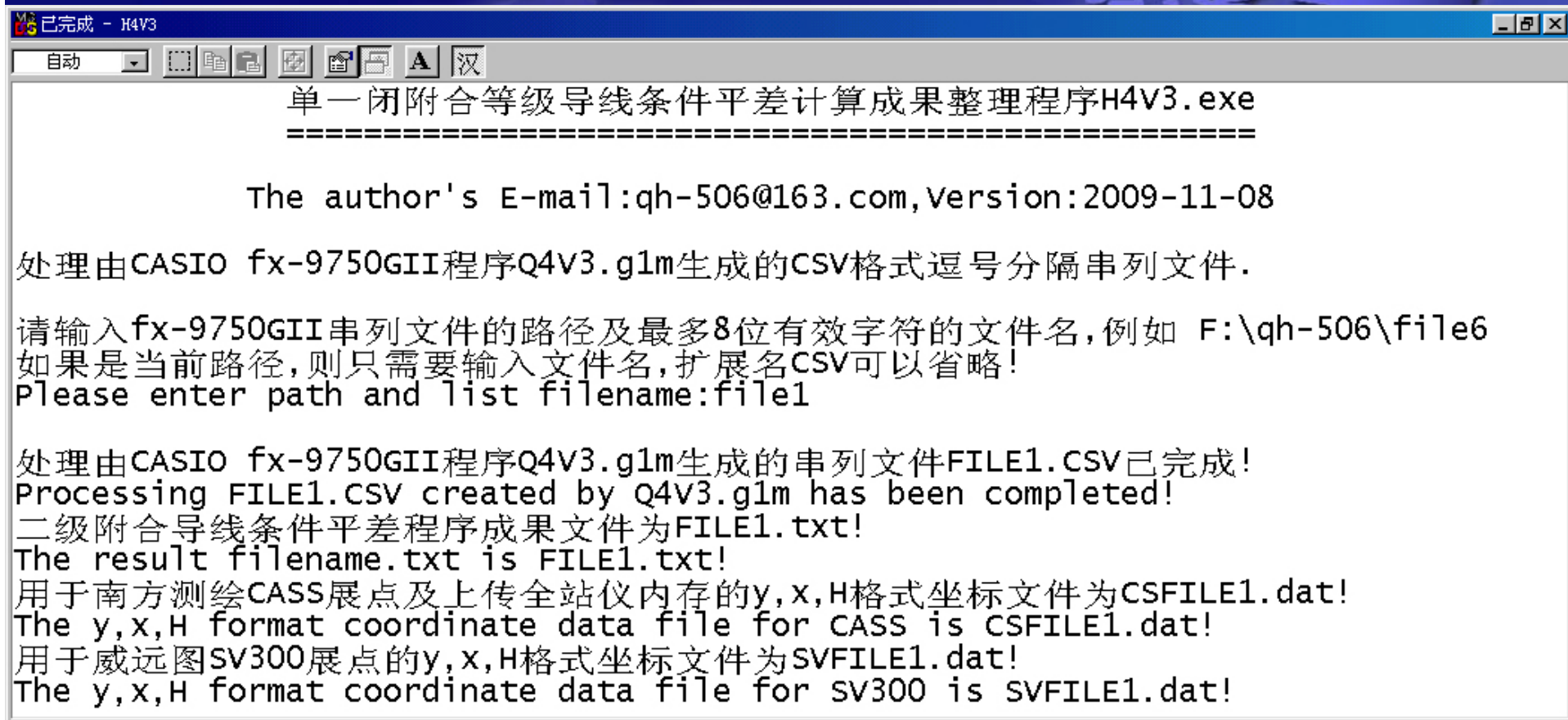
- 执行程序Q4V3的屏幕提示与用户操作

屏幕提示	按键	说明
Traverse condition adjust Q4V3		显示程序标题
connecting traverse		显示为附和导线
Traverse grade(1/2/3/4/5)=?	4 EXE	输 4 选择二级导线,耗时 1.41"
$f_{\beta}(s)=29.8731$	EXE	显示以秒为单位的方位角闭合差
$f_x(m)=0.0882$	EXE	显示坐标闭合差
$f_y(m)=-0.0306$	EXE	
$1/K=1/11776$	EXE	显示全长相对闭合差,耗时 1.25"
$m_0(s)=\pm 4.1032$	EXE	显示以秒为单位的单位权中误差
check $f_x(m)=0.0000$	EXE	显示推算坐标平差值检核结果
check $f_y(m)=0.0000$	EXE	计算未知点误差椭圆元素,耗时 5.84"
Q4V3 $\Rightarrow$ End		程序结束显示

- 在FA-124中将File1输出为File1.CSV文件



- 在PC机执行成果整理程序H4V3.exe输入File1



• File1.txt文件

水平角与边长观测值,改正数,平差值						
=====						
点号	水平角(dms)	改正数(s)	平差值(dms)	边长(m)	改正数(cm)	平差值(m)
B	253.57030	5.69	253.57087	136.0820	- .44	136.0776
1	162.54440	5.36	162.54494	161.0160	- .47	161.0113
2	198.28060	5.26	198.28113	239.5120	- .43	239.5077
3	240.05570	4.63	240.06016	169.2480	- .05	169.2475
4	189.07090	3.53	189.07125	132.6210	.02	132.6212
5	191.24360	2.66	191.24387	141.0580	.12	141.0592
6	165.30520	1.76	165.30538	119.7480	- .00	119.7480
C	243.00010	.98	165.30538			
角度闭合差(s)=29.8731						
fx(m)=.0882						
全长相对闭合差=1/11776						
边长权(s2/cm2)=28.4444						
角度闭合差限差(s)=± 45.25						
fy(m)=- .0306						
全长相对闭合差限差=1/10000						
未知点坐标成果及误差椭圆元素						
=====						
点号	x坐标(m)	y坐标(m)	长半轴(cm)	短半轴(cm)	长轴方位(dm)	
1	2501873.5855	398785.0528	.69	.22	18.30	
2	2502034.5942	398785.9630	.88	.46	18.17	
3	2502261.3325	398863.1231	1.01	.61	50.39	
4	2502293.9333	399029.2011	.97	.56	77.42	
5	2502298.5287	399161.7427	.90	.42	87.55	
6	2502275.4293	399300.8977	.70	.20	84.37	

- CSFile1.dat,SVFile1.dat坐标文件

CSFILE1.DAT - 记事本

文件(F) 编辑(E) 格式(O) 查看(V) 帮助(H)

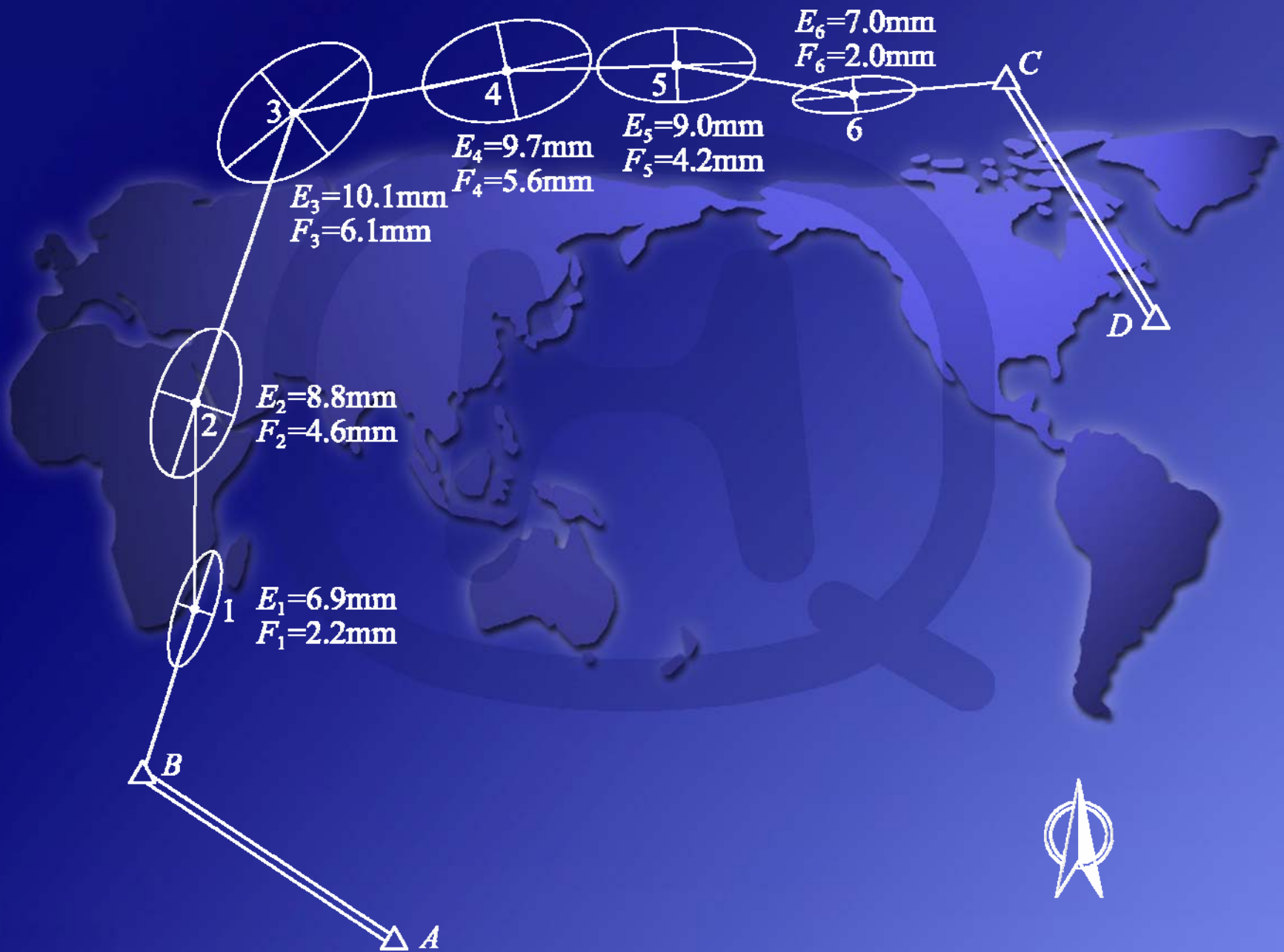
```
A,,398941.2330,2501613.6280,0
B,,398744.3370,2501743.7420,0
C,,399420.1790,2502285.9910,0
D,,399537.3110,2502098.9730,0
1,,398785.0528,2501873.5855,0
2,,398785.9630,2502034.5942,0
3,,398863.1231,2502261.3325,0
4,,399029.2011,2502293.9333,0
5,,399161.7427,2502298.5287,0
6,,399300.8977,2502275.4293,0
```

SVFILE1.DAT - 记事本

文件(F) 编辑(E) 格式(O) 查看(V) 帮助(H)

```
1,A,,398941.2330,2501613.6280,0
2,B,,398744.3370,2501743.7420,0
3,C,,399420.1790,2502285.9910,0
4,D,,399537.3110,2502098.9730,0
5,1,,398785.0528,2501873.5855,0
6,2,,398785.9630,2502034.5942,0
7,3,,398863.1231,2502261.3325,0
8,4,,399029.2011,2502293.9333,0
9,5,,399161.7427,2502298.5287,0
10,6,,399300.8977,2502275.4293,0
```

- 二级附和导线严密平差未知点的误差椭圆图



• 4、三等闭合导线严密平差案例



- 在STAT模式选择File2为当前串列文件
- 在RUN-MAT模式执行ClrList命令清除当前串列

```
Stat Wind      : Auto
Resid List     : List3
List File      : File2
Sub Name       : On
Frac Result    : ab/c
Func Type      : Y=
Graph Func     : On
FILE
```

```
ClrList
Done

Text Grph List Mat
```

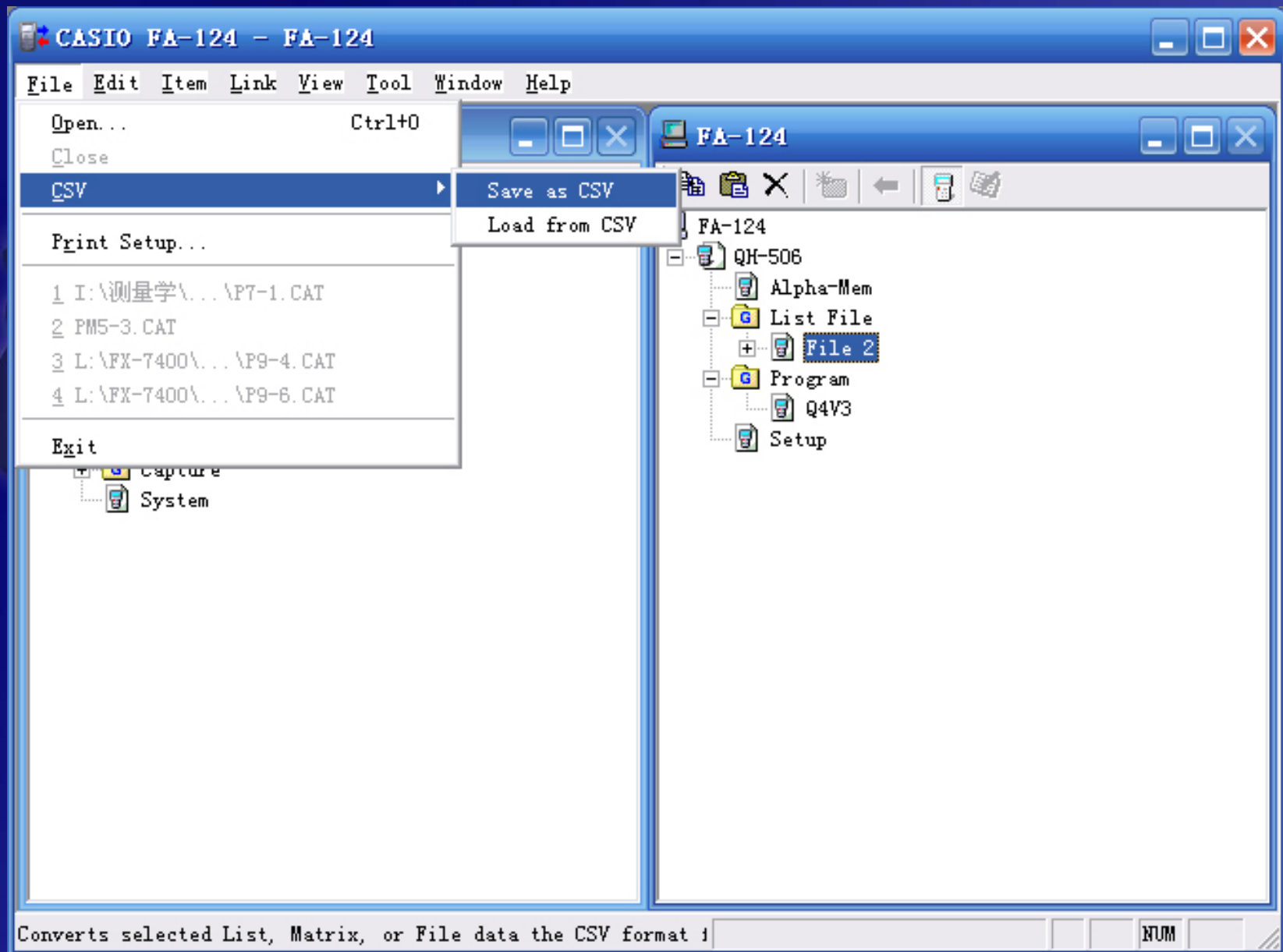
- 输入已知数据与观测数据到List 1~List 4串列

	List 1	List 2	List 3	List 4
SUB				
1	2.44E6	419113	65.384	1508.8
2	2.43E6	419166	296.04	1825.8
3			114.43	1577.9
4			297.44	1278.1
5			184.52	2104.8
6			218.64	2382.6
7			278.18	2000.6
8			240.66	1478.8
9			127.06	1287.5
10			157.6	

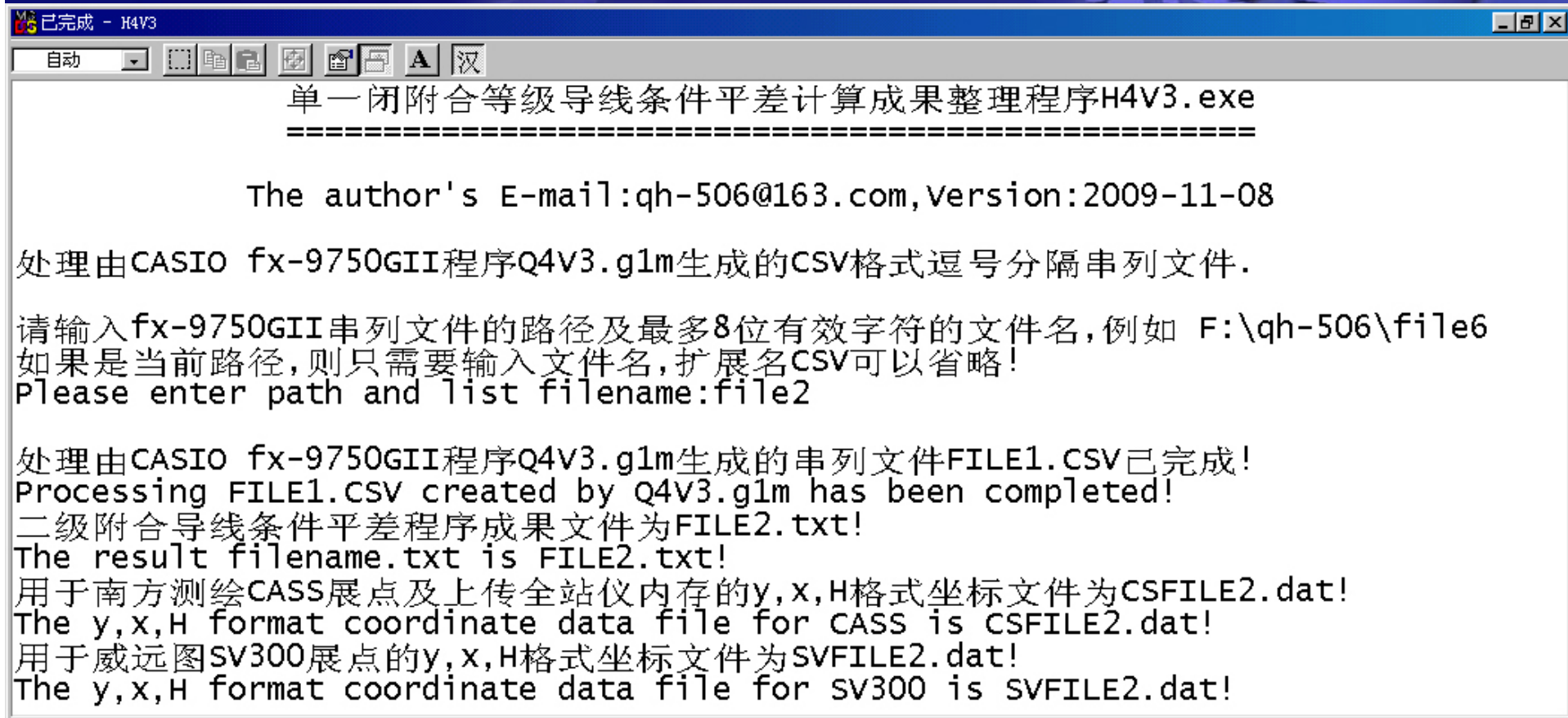
- 执行程序Q4V3的屏幕提示及用户操作

屏幕提示	按键	说明
Traverse condition adjust Q4V3 closed traverse Traverse grade(1/2/3/4/5)=? $f_{\beta}(s)=1.3$ $f_x(m)=0.0381$ $f_y(m)=0.0328$ $1/K=1/307179$ $m_0(s)=\pm 0.7415$ check $f_x(m)=0.0000$ check $f_y(m)=0.0000$ Q4V3 $\Rightarrow$ End	 2 EXE EXE EXE EXE EXE EXE	显示程序标题 显示为闭合导线 输 2 选择四等导线,耗时 1.37" 显示以秒为单位的方位角闭合差 显示坐标闭合差 显示全长相对闭合差,耗时 1.59" 显示以秒为单位的单位权中误差 显示推算坐标平差值检核结果 计算未知点误差椭圆元素,耗时 10.84" 程序结束显示

- 在FA-124中将File2输出为File2.CSV文件



- 在PC机执行成果整理程序H4V3.exe输入File2



• File2.txt文件

水平角与边长观测值,改正数,平差值						
=====						
点号	水平角(dms)	改正数(s)	平差值(dms)	边长(m)	改正数(cm)	平差值(m)
B	65.23043	.64	65.23049	1508.8330	- .41	1508.8289
1	296.02304	.46	296.02309	1825.8340	.29	1825.8369
2	114.26175	- .07	114.26174	1577.9420	- .16	1577.9404
3	297.26383	- .65	297.26376	1278.1270	.43	1278.1313
4	184.31469	- .61	184.31463	2104.8850	.42	2104.8892
5	218.38512	- .46	218.38507	2382.6740	.28	2382.6768
6	278.11187	.25	278.11189	2000.6860	- .36	2000.6824
7	240.39421	.69	240.39428	1478.8000	- .38	1478.7962
8	127.03466	.42	127.03470	1287.5710	- .38	1287.5672
B	157.36027	.64	65.23049			
角度闭合差(s)=1.3000						
fx(m)=.0381						
全长相对闭合差=1/307179						
边长权(s2/cm2)=1.9290						
角度闭合差限差(s)=± 15.81						
fy(m)=.0328						
全长相对闭合差限差=1/400000						
未知点坐标成果及误差椭圆元素						
=====						
点号	x坐标(m)	y坐标(m)	长半轴(cm)	短半轴(cm)	长轴方位(dm)	
1	2440432.3924	420528.0258	.53	.48	275.44	
2	2438606.6413	420510.3213	.81	.55	46.14	
3	2437939.9306	421940.4936	1.26	.70	33.39	
4	2437160.7489	420927.3325	1.25	.68	57.31	
5	2436013.3299	419162.6829	1.43	.75	271.22	
6	2436246.4387	416791.4365	1.62	.74	311.07	
7	2438189.3442	417268.7714	.95	.64	337.55	
8	2438585.4060	418693.5427	.52	.42	15.04	

- CSFile2.dat,SVFile2.dat坐标文件



A screenshot of a Windows Notepad window titled "CSFILE2.DAT - 记事本". The window contains a list of 8 coordinate data points, each on a new line. The data is formatted as a comma-separated list of values: a letter (A or B), followed by a comma, then a series of numbers separated by commas, ending with a zero. The values represent coordinates in a specific format.

```
A,,419113.0450,2443267.8250,0  
B,,419166.0240,2439783.1500,0  
1,,420528.0258,2440432.3924,0  
2,,420510.3213,2438606.6413,0  
3,,421940.4936,2437939.9306,0  
4,,420927.3325,2437160.7489,0  
5,,419162.6829,2436013.3299,0  
6,,416791.4365,2436246.4387,0  
7,,417268.7714,2438189.3442,0  
8,,418693.5427,2438585.4060,0
```



A screenshot of a Windows Notepad window titled "SVFILE2.DAT - 记事本". The window contains a list of 10 coordinate data points, each on a new line. The data is formatted as a comma-separated list of values: a number (1-10), followed by a comma, then a letter (A or B), followed by a comma, then a series of numbers separated by commas, ending with a zero. The values represent coordinates in a specific format.

```
1,A,,419113.0450,2443267.8250,0  
2,B,,419166.0240,2439783.1500,0  
3,1,,420528.0258,2440432.3924,0  
4,2,,420510.3213,2438606.6413,0  
5,3,,421940.4936,2437939.9306,0  
6,4,,420927.3325,2437160.7489,0  
7,5,,419162.6829,2436013.3299,0  
8,6,,416791.4365,2436246.4387,0  
9,7,,417268.7714,2438189.3442,0  
10,8,,418693.5427,2438585.4060,0
```

- 四等闭合导线严密平差未知点的误差椭圆图

