SPECTCOL improved with VO-Table and SAMP support

Y.A. BA and VAMDC Consortium

Interoperability Meeting 15-19 June 2015

SPECTCOL

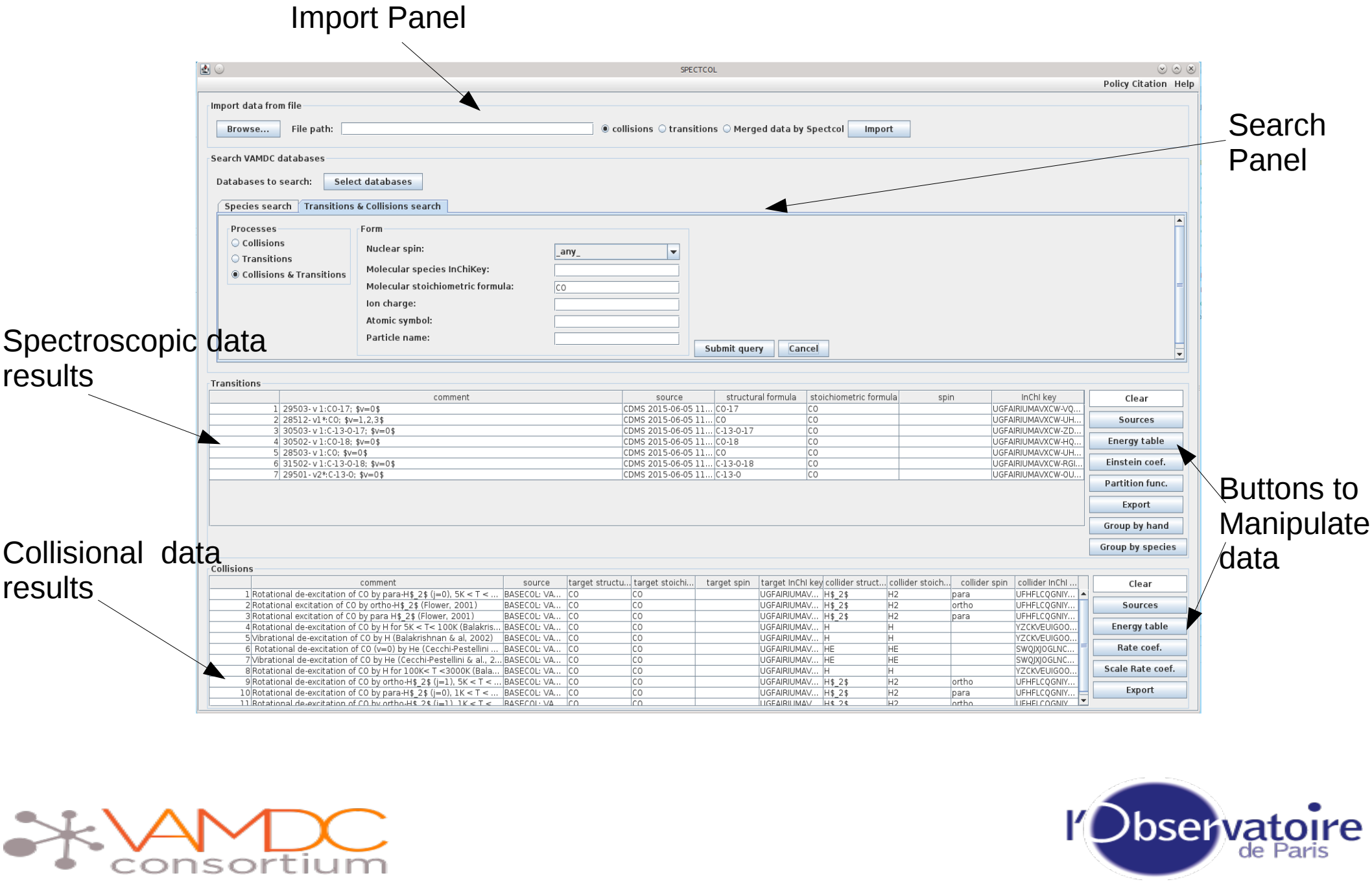
- A graphical tool (Swing) implemented in Java.
- Manipulates and combines spectroscopic and collisional data coming from the Databases (CDMS, JPL, BASECOL, HITRAN,...) using VAMDC technology.
- Manipulates and provides methods to convert XSAMS(Xml Schema for Atoms, Molecules and Solids) data into other formats (CSV, RADEX, LTE).

http://www.vamdc.org/activities/research/software/spectcol/

VAMDC consortium

l'Observatoire de Paris

SPECTCOL main panel



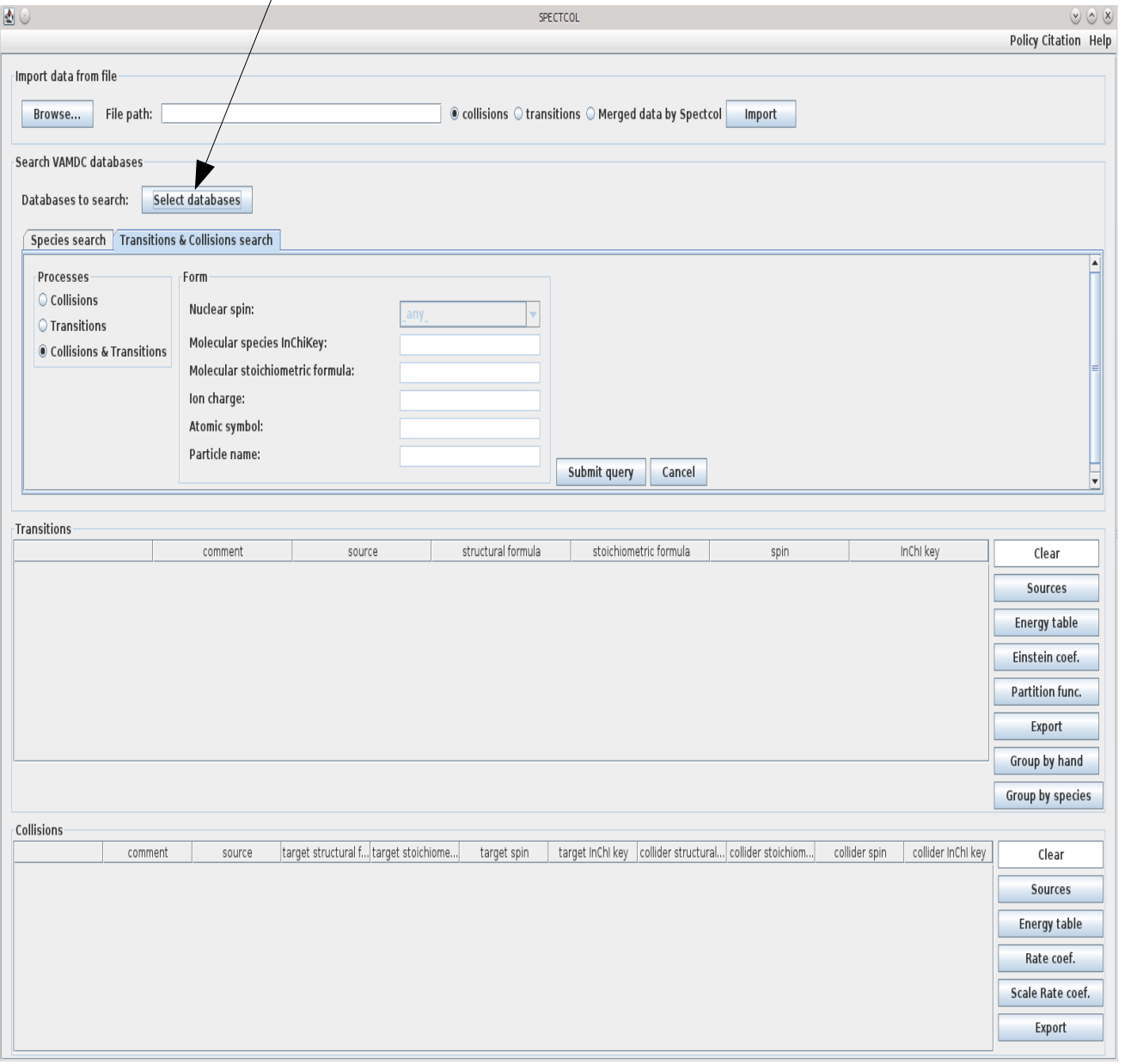
SPECTCOL : Interoperability

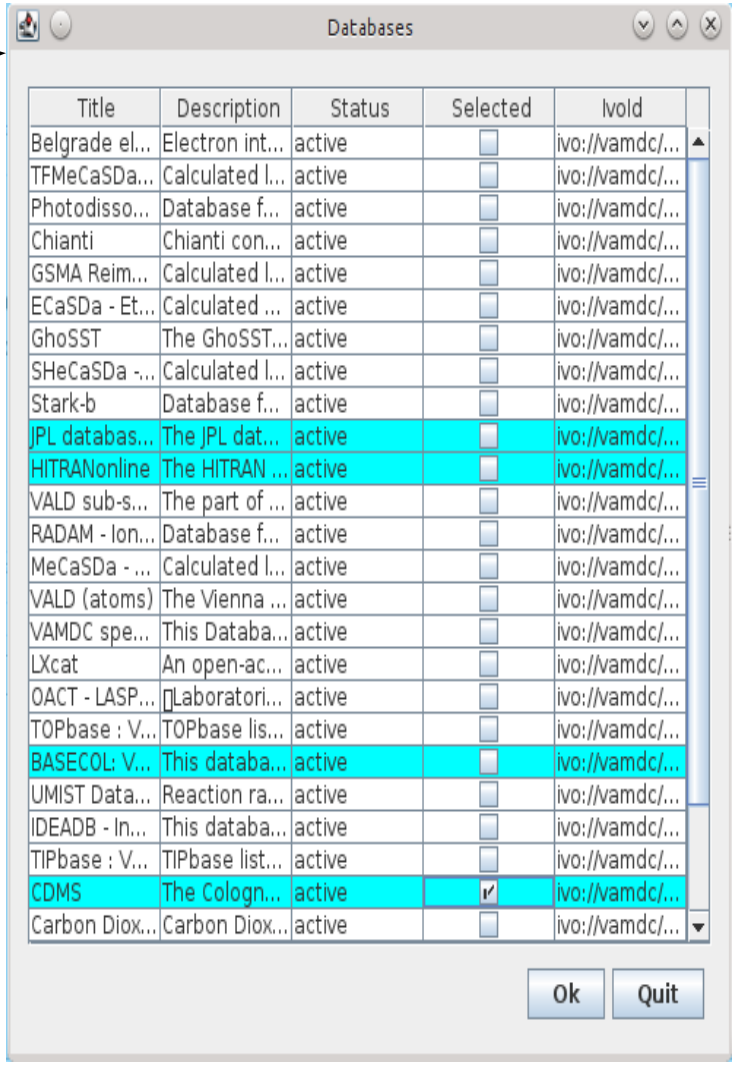
Spectcol can send data table with SAMP (which was easily integrated)

- Data are sent in VO-Table format
- All tables (Energies, Einstein coefficients, Rate coefficients and Partition functions) can be sent to any tool accepting VO-Table such as TopCat

Use case (1): Plot CO Einstein Coeff. with TopCat

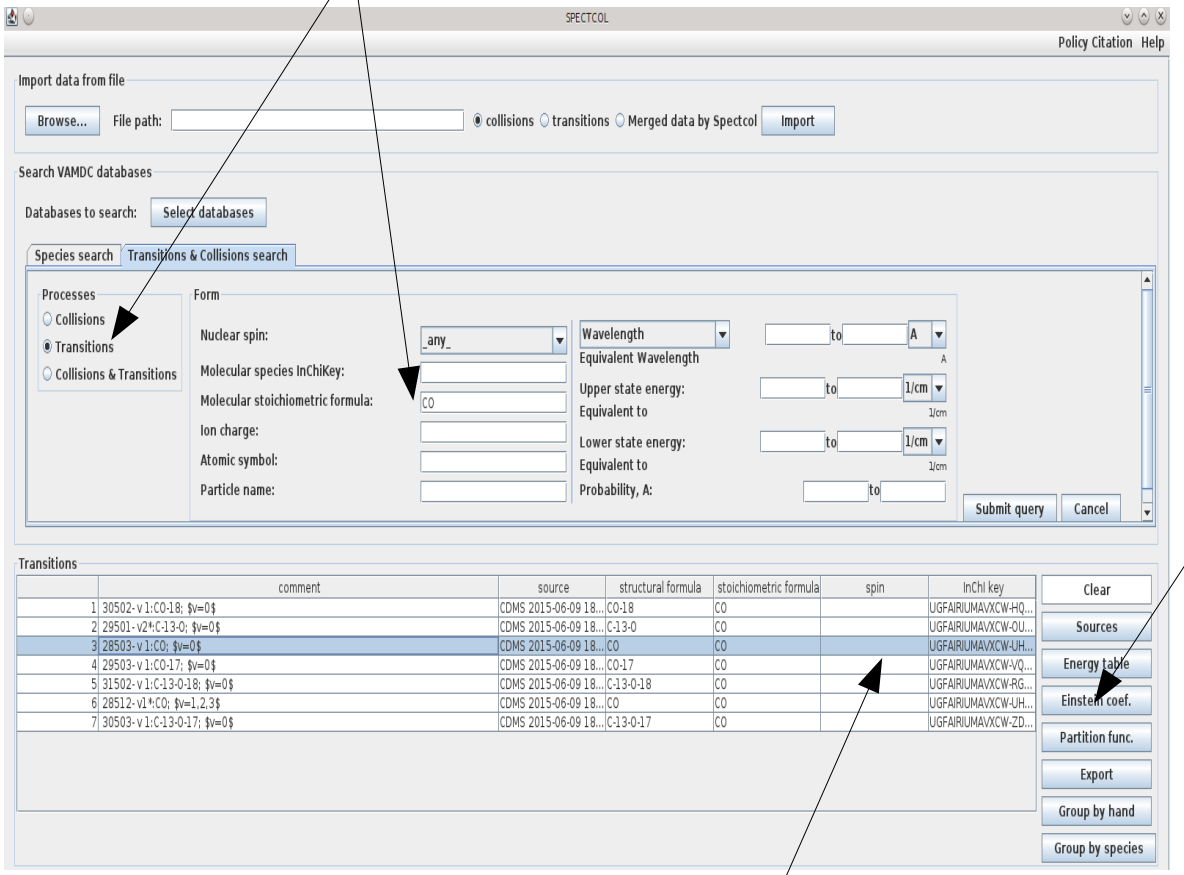
1. Select a database (ex : CDMS)





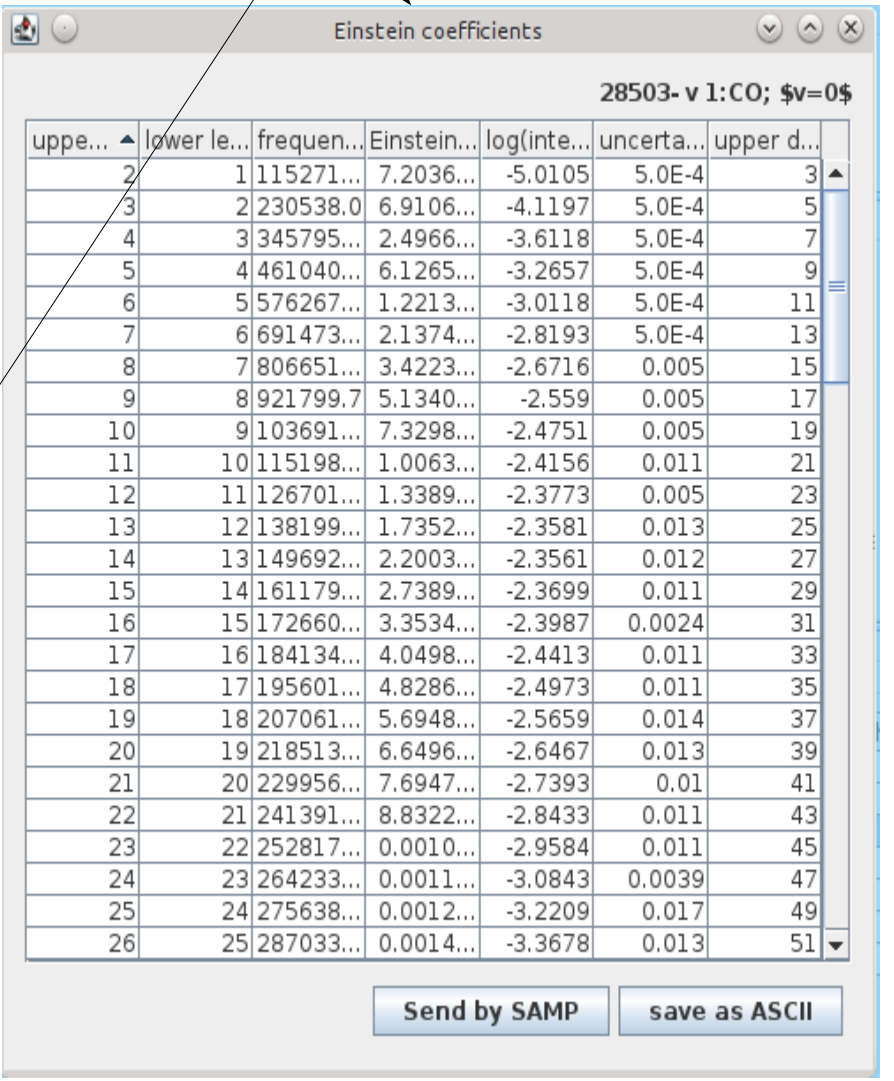
Use case (1): Plot CO Einstein Coeff. with TopCat

2. Select the transition process and Search a molecule (ex : CO)



3. Select a sepectroscopic dataset

4. Display Einstein table



uppe...	lower le...	frequen...	Einstein...	log(inte...	uncerta...	upper d...
2	1	115271...	7.2036...	-5.0105	5.0E-4	3
3	2	230538.0	6.9106...	-4.1197	5.0E-4	5
4	3	345795...	2.4966...	-3.6118	5.0E-4	7
5	4	461040...	6.1265...	-3.2657	5.0E-4	9
6	5	576267...	1.2213...	-3.0118	5.0E-4	11
7	6	691473...	2.1374...	-2.8193	5.0E-4	13
8	7	806651...	3.4223...	-2.6716	0.005	15
9	8	921799.7	5.1340...	-2.559	0.005	17
10	9	103691...	7.3298...	-2.4751	0.005	19
11	10	115198...	1.0063...	-2.4156	0.011	21
12	11	126701...	1.3389...	-2.3773	0.005	23
13	12	138199...	1.7352...	-2.3581	0.013	25
14	13	149692...	2.2003...	-2.3561	0.012	27
15	14	161179...	2.7389...	-2.3699	0.011	29
16	15	172660...	3.3534...	-2.3987	0.0024	31
17	16	184134...	4.0498...	-2.4413	0.011	33
18	17	195601...	4.8286...	-2.4973	0.011	35
19	18	207061...	5.6948...	-2.5659	0.014	37
20	19	218513...	6.6496...	-2.6467	0.013	39
21	20	229956...	7.6947...	-2.7393	0.01	41
22	21	241391...	8.8322...	-2.8433	0.011	43
23	22	252817...	0.0010...	-2.9584	0.011	45
24	23	264233...	0.0011...	-3.0843	0.0039	47
25	24	275638...	0.0012...	-3.2209	0.017	49
26	25	287033...	0.0014...	-3.3678	0.013	51

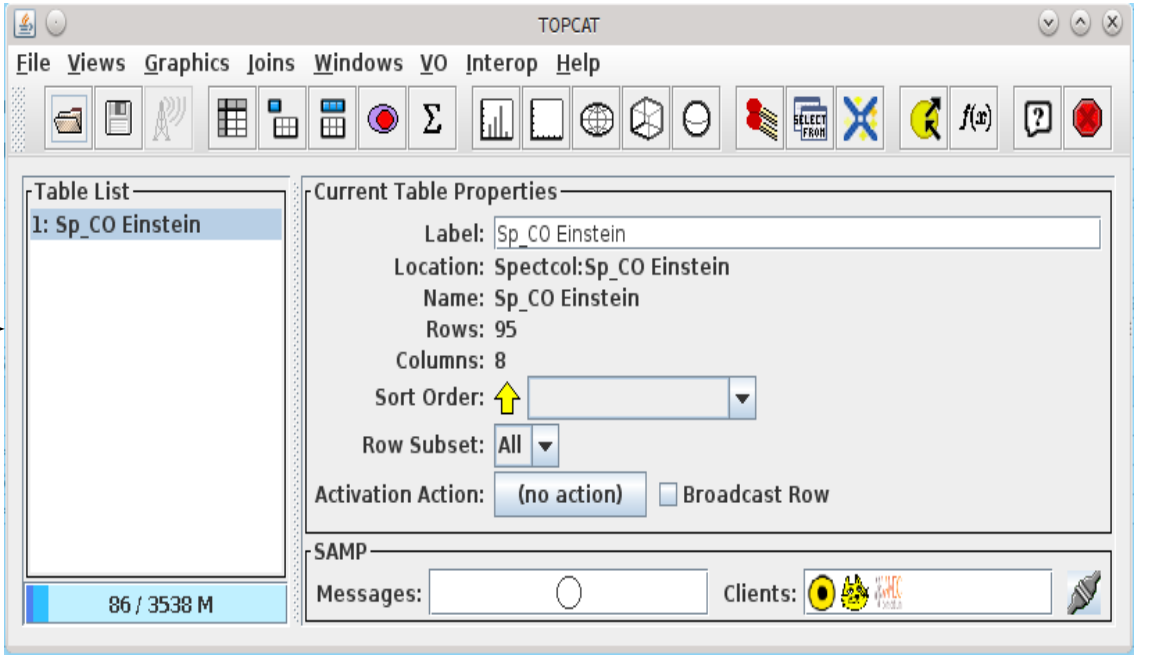
Use case (1): Plot CO Einstein Coeff. with TopCat

Einstein coefficients

28503- v 1:CO; $v=0$

uppe...	lower le...	frequen...	Einstein...	log(inte...	uncerta...	upper d...
2	1	115271...	7.2036...	-5.0105	5.0E-4	3
3	2	230538.0	6.9106...	-4.1197	5.0E-4	5
4	3	345795...	2.4966...	-3.6118	5.0E-4	7
5	4	461040...	6.1265...	-3.2657	5.0E-4	9
6	5	576267...	1.2213...	-3.0118	5.0E-4	11
7	6	691473...	2.1374...	-2.8193	5.0E-4	13
8	7	806651...	3.4223...	-2.6716	0.005	15
9	8	921799.7	5.1340...	-2.559	0.005	17
10	9	103691...	7.3298...	-2.4751	0.005	19
11	10	115198...	1.0063...	-2.4156	0.011	21
12	11	126701...	1.3389...	-2.3773	0.005	23
13	12	138199...	1.7352...	-2.3581	0.013	25
14	13	149692...	2.2003...	-2.3561	0.012	27
15	14	161179...	2.7389...	-2.3699	0.011	29
16	15	172660...	3.3534...	-2.3987	0.0024	31
17	16	184134...	4.0498...	-2.4413	0.011	33
18	17	195601...	4.8286...	-2.4973	0.011	35
19	18	207061...	5.6948...	-2.5659	0.014	37
20	19	218513...	6.6496...	-2.6467	0.013	39
21	20	229956...	7.6947...	-2.7393	0.01	41
22	21	241391...	8.8322...	-2.8433	0.011	43
23	22	252817...	0.0010...	-2.9584	0.011	45
24	23	264233...	0.0011...	-3.0843	0.0039	47
25	24	275638...	0.0012...	-3.2209	0.017	49
26	25	287033...	0.0014...	-3.3678	0.013	51

Send by SAMP | save as ASCII



5. Launch TopCat first and send it Einstein table

Use case (1) : Plot CO Einstein Coeff. with TopCat

TOPCAT(1): Table Browser

Window Subsets Help

Table Browser for 1: Sp_CO Einstein

	Index	Upper ...	Lower l...	Frequency	Einstein coeff...	log(intensi...	Uncertainty	Upper ...
1	1	2	1	1,152712E5	7,203603E-8	-5,0105	0,0005	3
2	2	3	2	2,305380E5	6,910612E-7	-4,1197	0,0005	5
3	3	4	3	3,457960E5	2,496637E-6	-3,6118	0,0005	7
4	4	5	4	4,610408E5	6,126524E-6	-3,2657	0,0005	9
5	5	6	5	5,762679E5	1,221311E-5	-3,0118	0,0005	11
6	6	7	6	6,914731E5	2,137452E-5	-2,8193	0,0005	13
7	7	8	7	8,066518E5	3,422310E-5	-2,6716	0,005	15
8	8	9	8	9,217997E5	5,134060E-5	-2,559	0,005	17
9	9	10	9	1,036912E6	7,329882E-5	-2,4751	0,005	19
10	10	11	10	1,151985E6	0,0001	-2,4156	0,011	21
11	11	12	11	1,267014E6	0,00013	-2,3773	0,005	23
12	12	13	12	1,381995E6	0,00017	-2,3581	0,013	25
13	13	14	13	1,496923E6	0,00022	-2,3561	0,012	27
14	14	15	14	1,611794E6	0,00027	-2,3699	0,011	29
15	15	16	15	1,726603E6	0,00034	-2,3987	0,0024	31
16	16	17	16	1,841346E6	0,0004	-2,4413	0,011	33

TOPCAT

File Views Graphics Joins Windows VO Interop Help

Table List

1: Sp_CO Einstein

44 / 3538 M

Current Table Properties

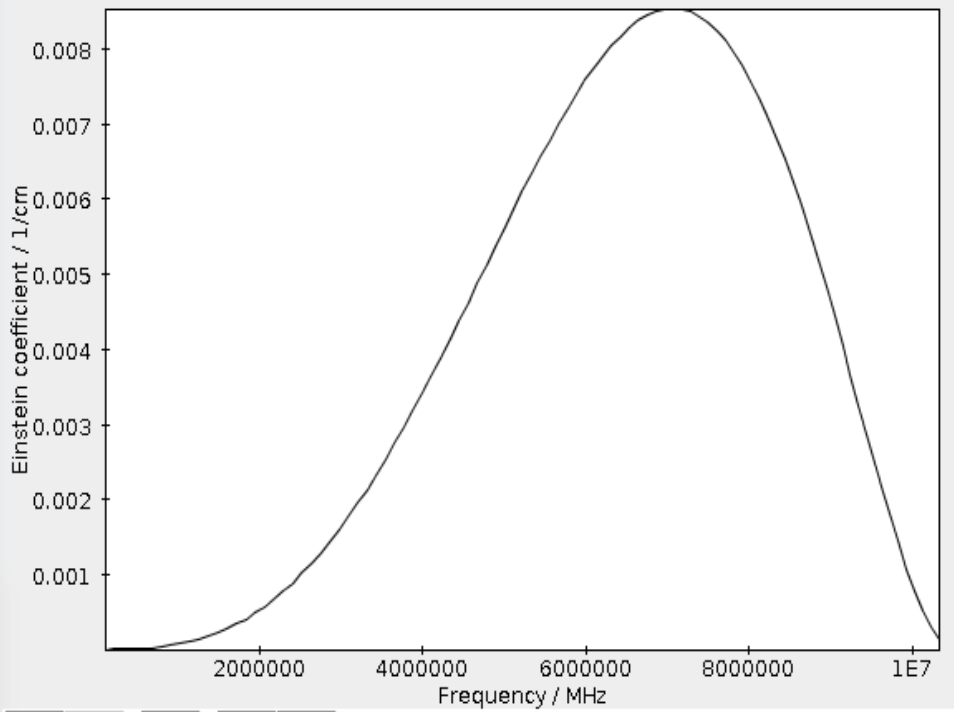
Label: Sp_CO Einstein
Location: Spectcol:Sp_CO Einstein
Name: Sp_CO Einstein
Rows: 95
Columns: 8
Sort Order:
Row Subset: All

SAMP

Messages: Clients:

Stacked Line Plot (old)

Window Export Plot Rendering Subsets Errors Line Style Error Style Help



Main

Data

Table: 1: Sp_CO Einstein

X Axis: Frequency

Y Axis: Einstein coefficient Log Flip

Row Subsets

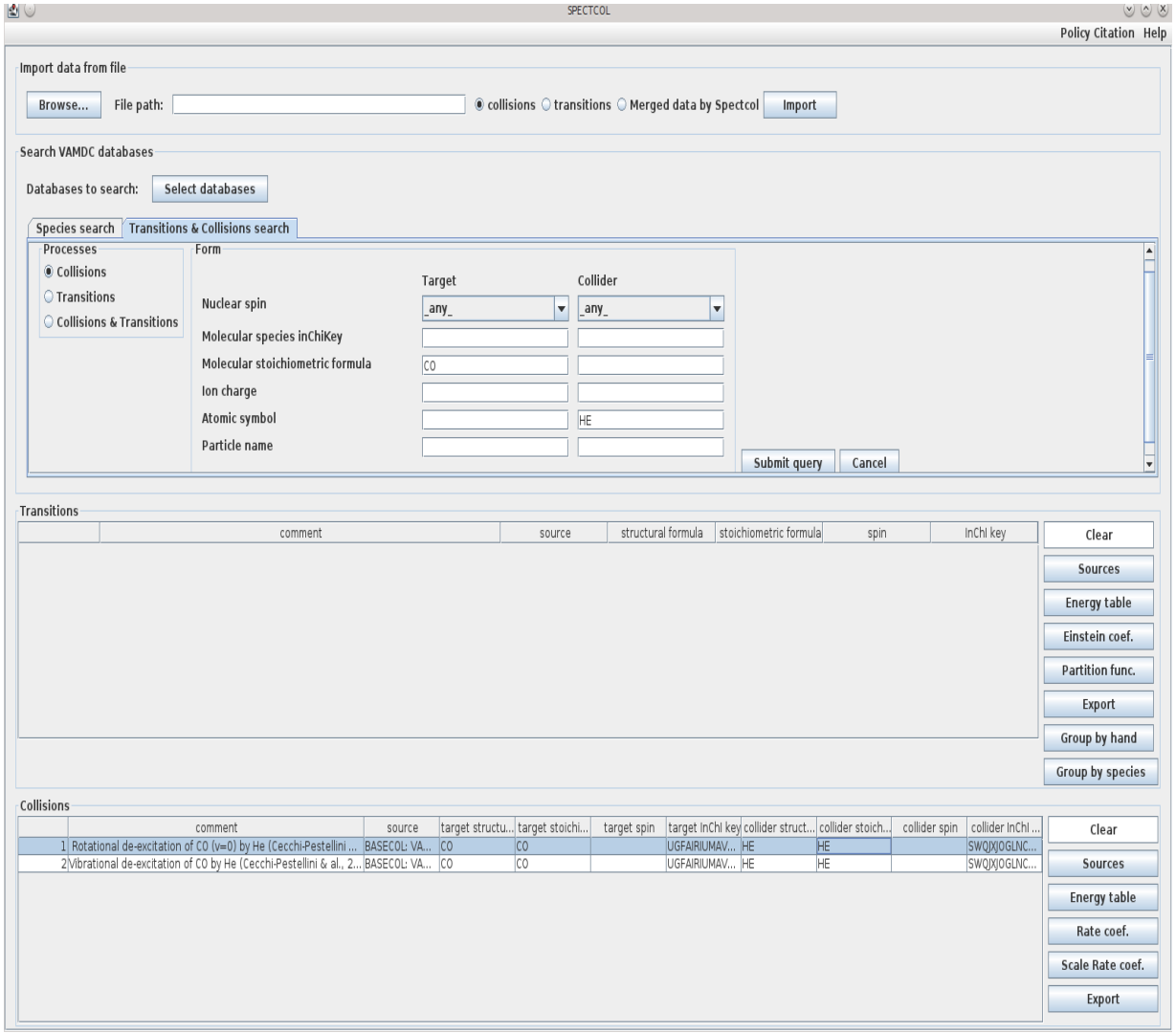
All

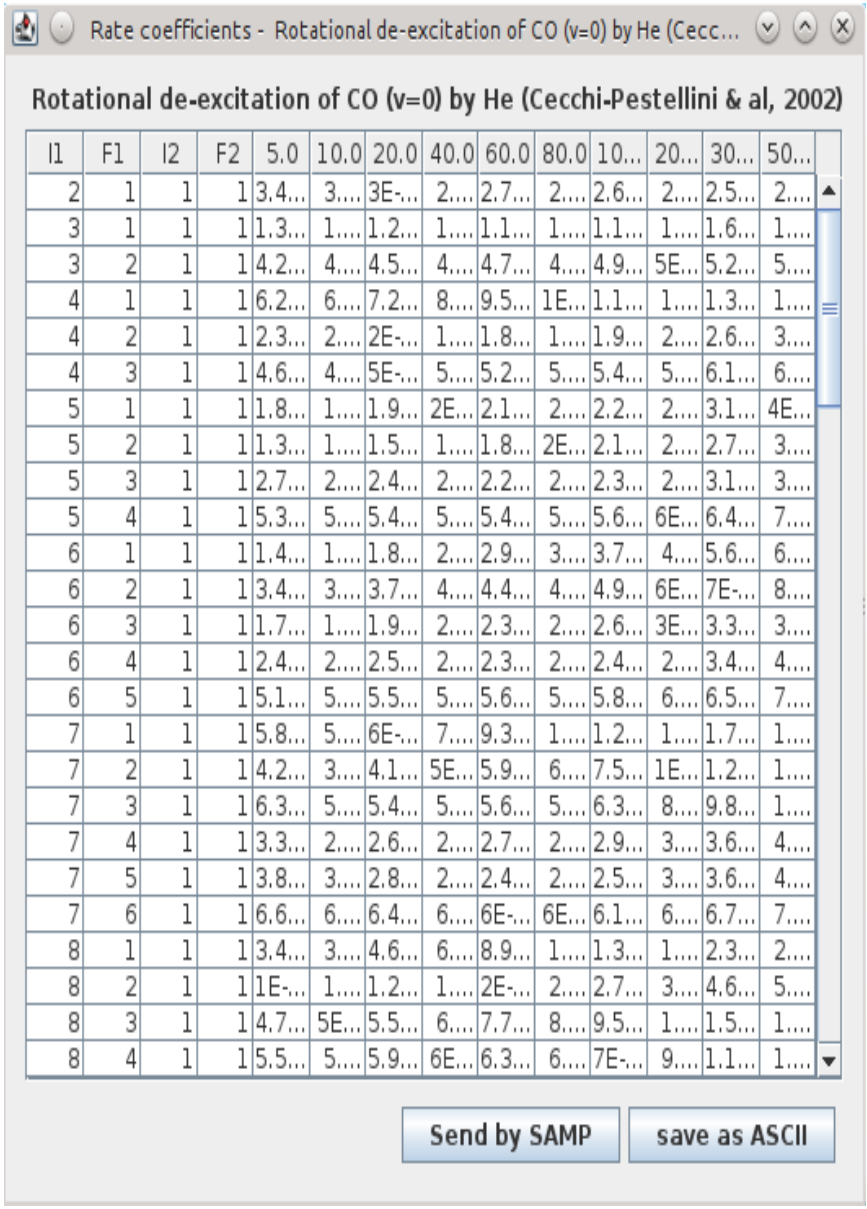
Position:

Use case (2) : Plot CO-HE Rate Coeff. with TopCat

Same procedure than the spectroscopy to search collisional data :

1. Select BASECOL database
2. Search the collision CO-HE
3. Select a dataset
4. Display the Rate coefficients table



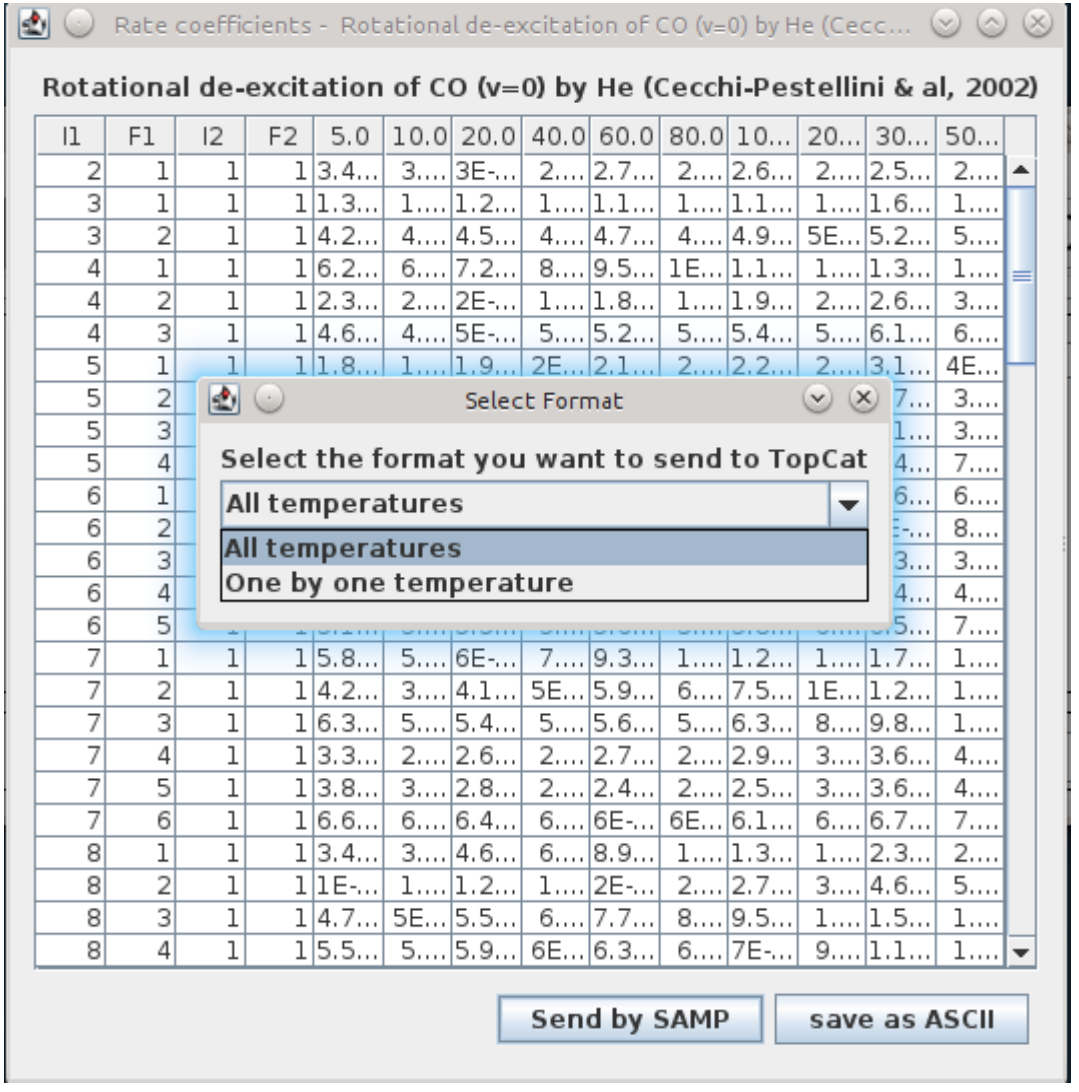


l1	F1	l2	F2	5.0	10.0	20.0	40.0	60.0	80.0	10...	20...	30...	50...
2	1	1	1	3.4...	3....	3E-...	2....	2.7...	2....	2.6...	2....	2.5...	2....
3	1	1	1	1.3...	1....	1.2...	1....	1.1...	1....	1.1...	1....	1.6...	1....
3	2	1	1	4.2...	4....	4.5...	4....	4.7...	4....	4.9...	5E...	5.2...	5....
4	1	1	1	6.2...	6....	7.2...	8....	9.5...	1E...	1.1...	1....	1.3...	1....
4	2	1	1	2.3...	2....	2E-...	1....	1.8...	1....	1.9...	2....	2.6...	3....
4	3	1	1	4.6...	4....	5E-...	5....	5.2...	5....	5.4...	5....	6.1...	6....
5	1	1	1	1.8...	1....	1.9...	2E...	2.1...	2....	2.2...	2....	3.1...	4E...
5	2	1	1	1.3...	1....	1.5...	1....	1.8...	2E...	2.1...	2....	2.7...	3....
5	3	1	1	2.7...	2....	2.4...	2....	2.2...	2....	2.3...	2....	3.1...	3....
5	4	1	1	5.3...	5....	5.4...	5....	5.4...	5....	5.6...	6E...	6.4...	7....
6	1	1	1	1.4...	1....	1.8...	2....	2.9...	3....	3.7...	4....	5.6...	6....
6	2	1	1	3.4...	3....	3.7...	4....	4.4...	4....	4.9...	6E...	7E-...	8....
6	3	1	1	1.7...	1....	1.9...	2....	2.3...	2....	2.6...	3E...	3.3...	3....
6	4	1	1	2.4...	2....	2.5...	2....	2.3...	2....	2.4...	2....	3.4...	4....
6	5	1	1	5.1...	5....	5.5...	5....	5.6...	5....	5.8...	6....	6.5...	7....
7	1	1	1	5.8...	5....	6E-...	7....	9.3...	1....	1.2...	1....	1.7...	1....
7	2	1	1	4.2...	3....	4.1...	5E...	5.9...	6....	7.5...	1E...	1.2...	1....
7	3	1	1	6.3...	5....	5.4...	5....	5.6...	5....	6.3...	8....	9.8...	1....
7	4	1	1	3.3...	2....	2.6...	2....	2.7...	2....	2.9...	3....	3.6...	4....
7	5	1	1	3.8...	3....	2.8...	2....	2.4...	2....	2.5...	3....	3.6...	4....
7	6	1	1	6.6...	6....	6.4...	6....	6E-...	6E...	6.1...	6....	6.7...	7....
8	1	1	1	3.4...	3....	4.6...	6....	8.9...	1....	1.3...	1....	2.3...	2....
8	2	1	1	1E-...	1....	1.2...	1....	2E-...	2....	2.7...	3....	4.6...	5....
8	3	1	1	4.7...	5E...	5.5...	6....	7.7...	8....	9.5...	1....	1.5...	1....
8	4	1	1	5.5...	5....	5.9...	6E...	6.3...	6....	7E-...	9....	1.1...	1....

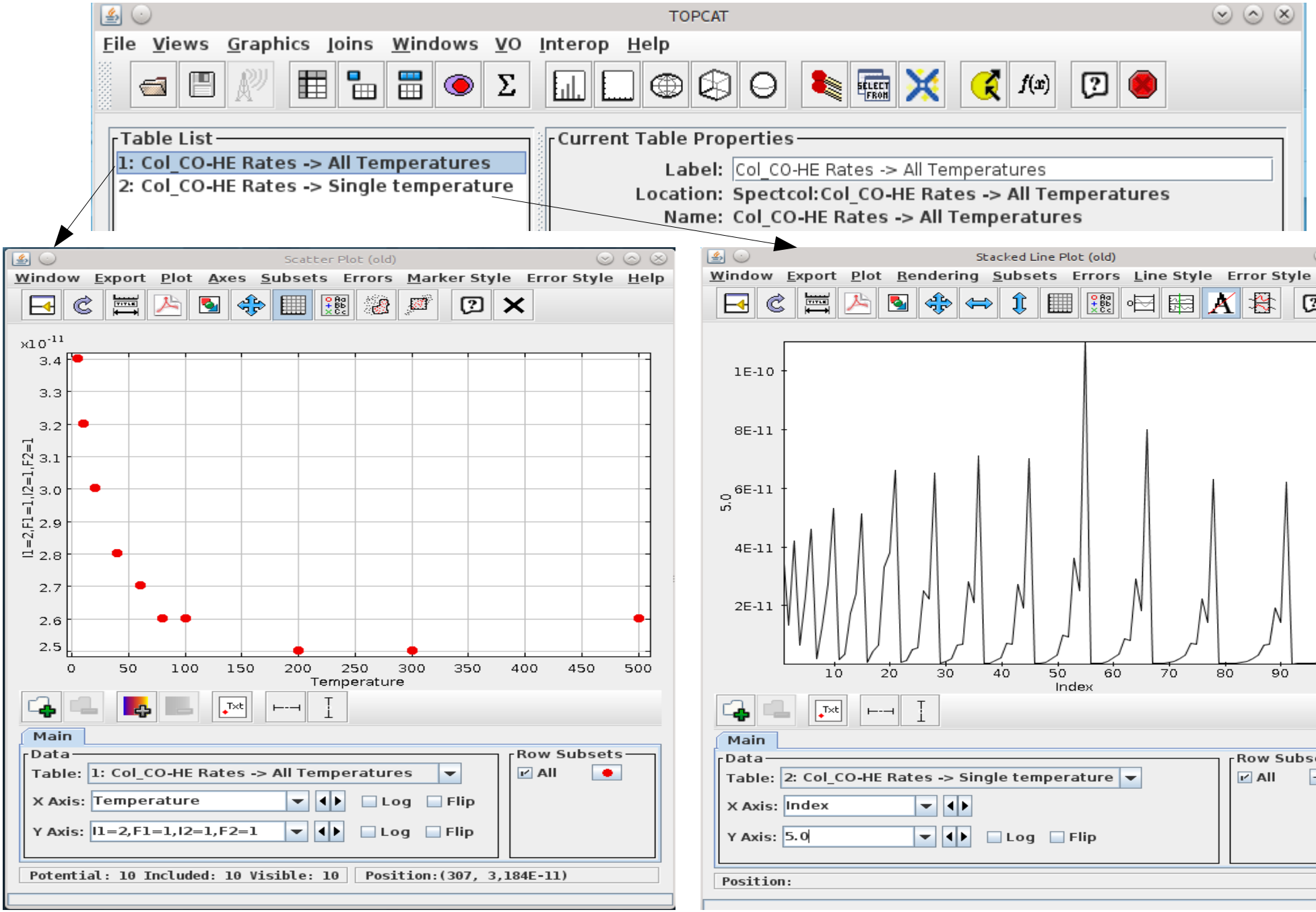
Use case (2) : Plot CO-HE Rate Coeff. with TopCat

2 options to send data by SAMP :

- Visualize all transitions for each temperature
- Visualize all the temperatures for one transition



Use case (2) : Plot CO-HE Rate Coeff. with TopCat



Let's work together

We are interested to work with the other VO-Tools

- Contact : yaye-awa.ba@obspm.fr
- Forum link : http://forum.vamdc.org/
- VAMDC Consortium website : http://www.vamdc.org/