CASSIS

Centre d'Analyse Scientifique de Spectres Infrarouges et Submillimétriques

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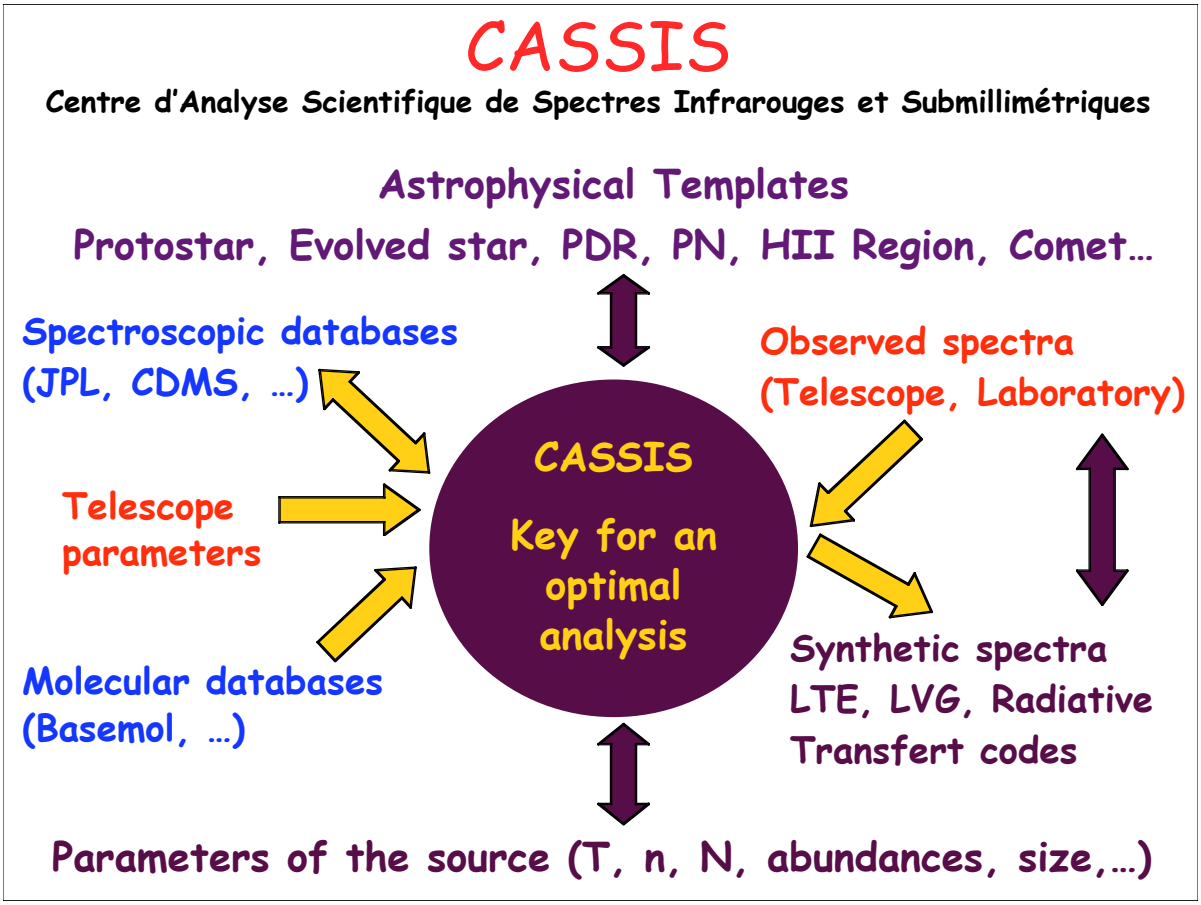


CASSIS Software

Software Tool Package (Java)

- Prediction of spectra,
- Observation preparation tool (line strength, blending)
- Speeding up/simplification of the analysis of high resolution spectral data (spectral surveys)

Web Sites : http://www.cesr.fr/~walters/web_cassis/index.html
http://pc-126.cesr.fr

Client/Server web version under development

Current standalone distributed version : 1.3 (07/09/12)

http://pc-126.cesr.fr/trac.cgi/wiki/InstallationCassisStandalone

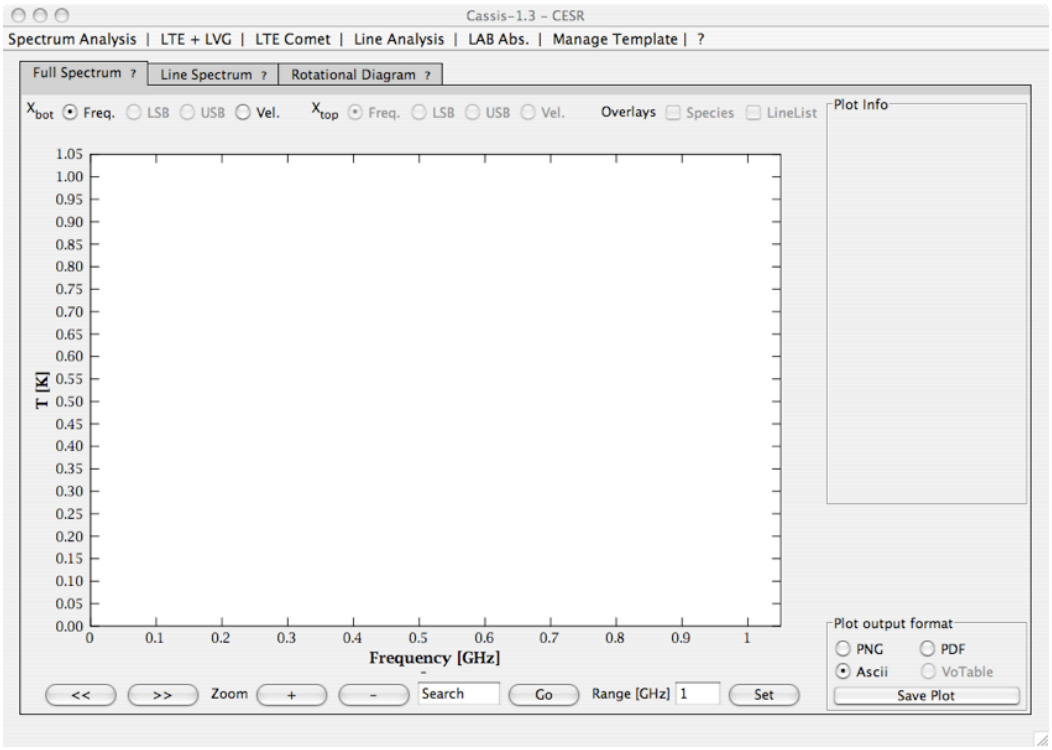
Version 1.3

- Version 1.3 more complete, more robust, less buggy, but still in development
- Supported OS :
  - Unix (Sun), Linux (Ubhuntu, Suse, Redhat),
  - Mac OSX (Panther, Tiger, Leopard),
  - Windows (2000, XP, Vista)
- Not yet compliant Java 1.6
- Please report by email all problems using CASSIS :
  (caux/klotz/vastel/walters)@cesr.fr
  Excepted blocking problems related to Mysql installation !
- A caveat document is available on the web
- Documentation framework ready, to be populated

CASSIS Database

- The complete database is resident on the laptop (~ 900 Mb)
- Mysql Format
  - Selection of information in JPL or CDMS databases
  - Adding of other parameters used by CASSIS
    - Eup, Aij, ...
    - ß for comets, γ_{self} for Lab Abs...
  - Ortho-Para Separation for a few species (H_2O, H_2S...)
- Allows a quick access with various sorting
- Can be populated separately by each user
- Update via the Web : one unix command (~ 1/2 hour...)

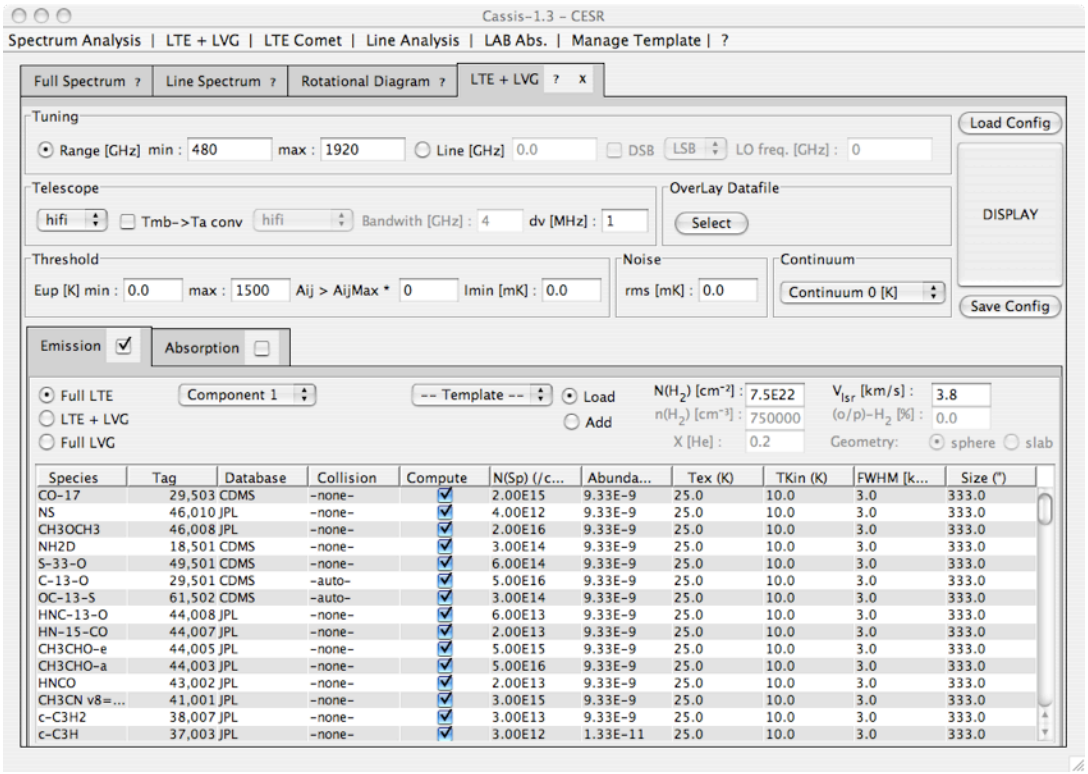
CASSIS : Main Window



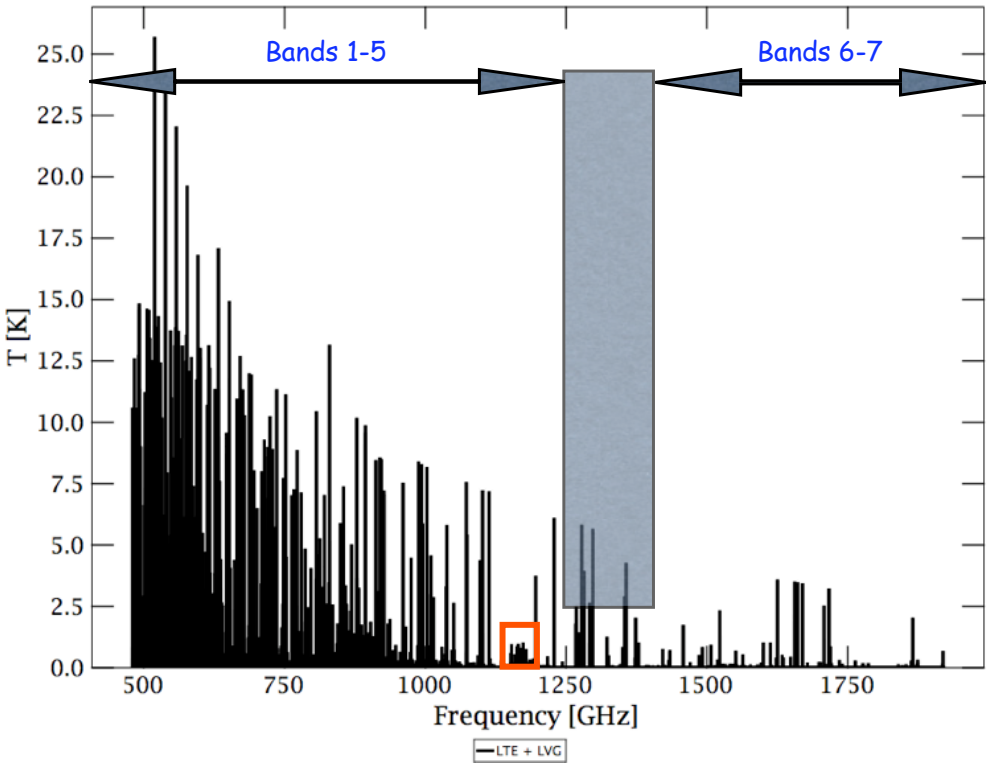
IRAS16293 molecular content

NH_2		^{13}CO	$5x10^{16}$	$H_2C^{18}O$	$5x10^{12}$	CS	$1x10^{14}$	C_4H	$2x10^{13}$
CH_2D^+		HCO^+	$4x10^{13}$	D_2CO	$1x10^{15}$	SiO	$1.3x10^{13}$	^{33}SO	$6x10^{14}$
OH	$7x10^{14}$	HCO	$4x10^{13}$	$^{13}CH_3OH$	$2x10^{14}$	CH_3CHO-a		^{34}SO	$5x10^{13}$
CH_3D		N_2H^+		H_2S	$2x10^{15}$	N_2O		$S^{18}O$	$4x10^{14}$
NH_2D	$3x10^{14}$	$C^{17}O$	$2x10^{15}$	H_2O_2	$1x10^{14}$	CH_3CHO-e	$1.5x10^{14}$	HC_3N	
H_2O	$1x10^{16}$	$D^{13}CN$	$3x10^{11}$	HDS	$4x10^{13}$	$H^{15}NCO$	$2x10^{13}$	$HC^{13}CCN$	
HDO	$1x10^{15}$	$C^{18}O$	$8x10^{15}$	C_3H	$1x10^{12}$	$HN^{13}CO$	$6x10^{13}$	$HC_2{}^{13}CN$	
$H_2{}^{18}O$	$2x10^{14}$	$H^{13}CO^+$	$6x10^{12}$	c-C_3H	$3x10^{12}$	^{13}CS	$3.5x10^{13}$	DC_3N	
CCH	$2x10^{15}$	$HC^{17}O^+$	$2x10^{12}$	c-C_3H_2	$1.5x10^{13}$	^{29}SiO	$2.5x10^{12}$	C_2H_3CN	
CN	$5x10^{13}$	DCO^+	$4x10^{12}$	l-C_3H_2	$6x10^{11}$	NH_2CHO		C_2H_5CN	
CCD		p-H_2CO	$3x10^{15}$	C_3D		HCS$^+$		C_2S	
^{13}CCH	$2x10^{14}$	o-H_2CO	$6x10^{15}$	c-$CC^{13}CH$		$C^{33}S$	$2.5x10^{13}$	OCS	$2x10^{16}$
$C^{13}CH$	$3x10^{13}$	$C^{13}H_2NH$		c-C_3D		$C^{34}S$	$1x10^{13}$	CH_3OCHO-a	$1x10^{15}$
HCN	$5x10^{13}$	NO	$8x10^{14}$	c-C_3HD		^{30}SiO	$5x10^{11}$	CH_3OCHO-e	$1x10^{15}$
HNC	$1.5x10^{13}$	N_2D^+	$2x10^{12}$	CH_3CCH	$2x10^{14}$	H_2CS	$4x10^{15}$?	$O^{13}CS$	$3x10^{14}$
^{13}CN		$HC^{17}O^+$		C_2O		C_2H_5OH		$OC^{34}S$	$2x10^{15}$
CO	$4x10^{18}$	$^{13}C^{17}O$		CH_3CN	$3x10^{15}$	c-HCOOH	$3x10^{13}$	^{18}OCS	$2x10^{14}$
$H^{13}CN$	$7x10^{12}$	HNO	$4x10^{13}$	CH_3CCD	$6x10^{13}$	CH_3OCH_3	$2x10^{16}$	SO_2	$1x10^{16}$
$HC^{15}N$	$2x10^{12}$	$HC^{18}O^+$	$5x10^{11}$	CH_2DCCH	$3x10^{13}$	NS	$4.5x10^{12}$	$^{34}SO_2$	$4x10^{14}$
DCN	$5x10^{12}$	HDCO	$1x10^{14}$	$CH_3C^{15}N$	$8x10^{11}$	t-HCOOH		C_3S	
$HN^{13}C$	$7x10^{12}$	$H_2{}^{13}CO$	$1x10^{13}$	CH_2CO	$2x10^{13}$?	$H_2{}^{13}CS$	$4x10^{14}$	HC_5N	
$H^{15}NC$	$9x10^{11}$	$^{13}C^{18}O$	$1x10^{15}$	NH_2CN		HDCS	$1x10^{15}$?	$HCCCC^{13}CN$	
DNC	$3x10^{12}$	H_2COH^+	$2x10^{13}$	$^{13}CH_3CN$		SO	$2x10^{16}$	$HCCC^{13}CCN$	
$HCNH^+$		$D^{13}CO^+$	$2x10^{11}$	$CH_3{}^{13}CN$		$H_2C^{34}S$		$HCC^{13}CCCN$	
CO^+	$8x10^{12}$	CH_3OH	$1x10^{16}$	CH_2DCN		$N^{34}S$		$HC^{13}CCCCN$	
CH_2NH	$2x10^{13}$	$DC^{18}O^+$	$1x10^{11}$	HNCO	$2x10^{13}$?	SO^+	$2x10^{13}$	$H^{13}CCCCCN$	

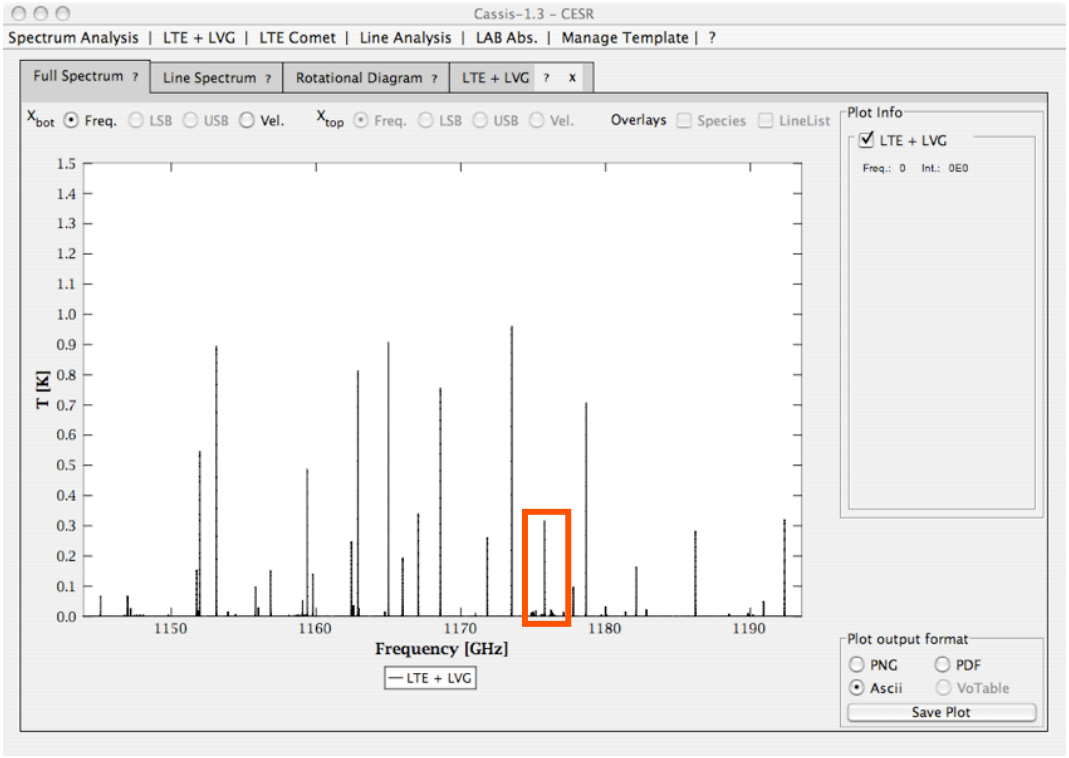
LTE + LVG - Range mode



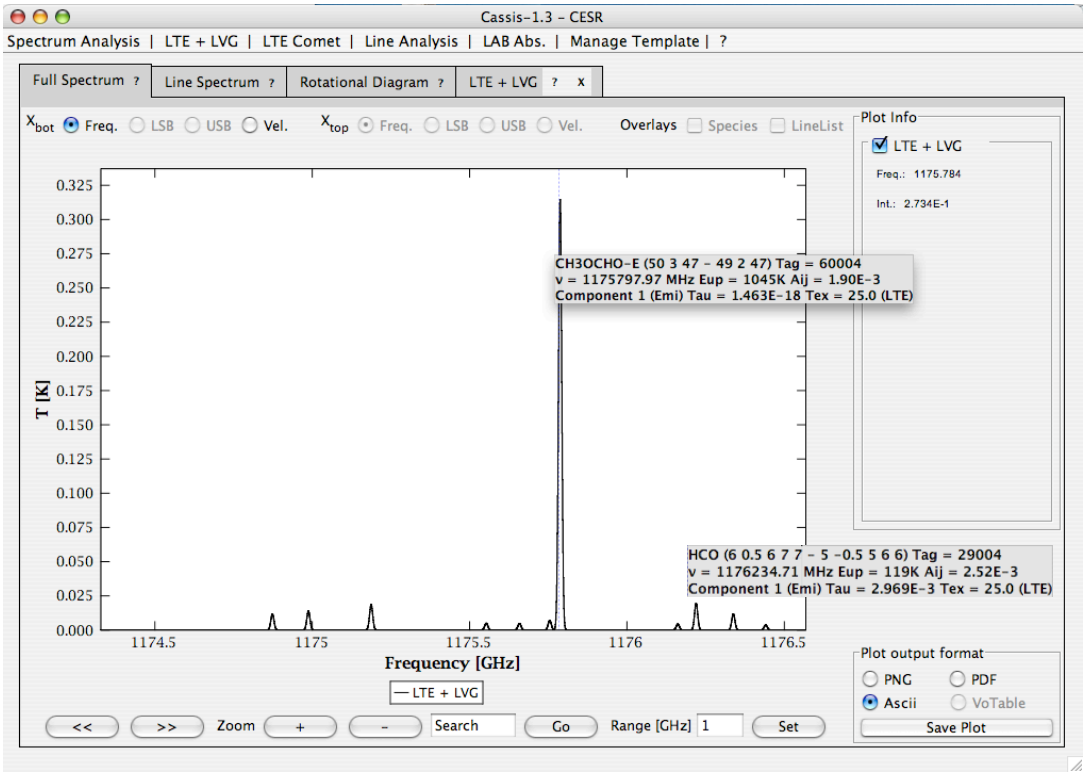
LTE + LVG - Range mode



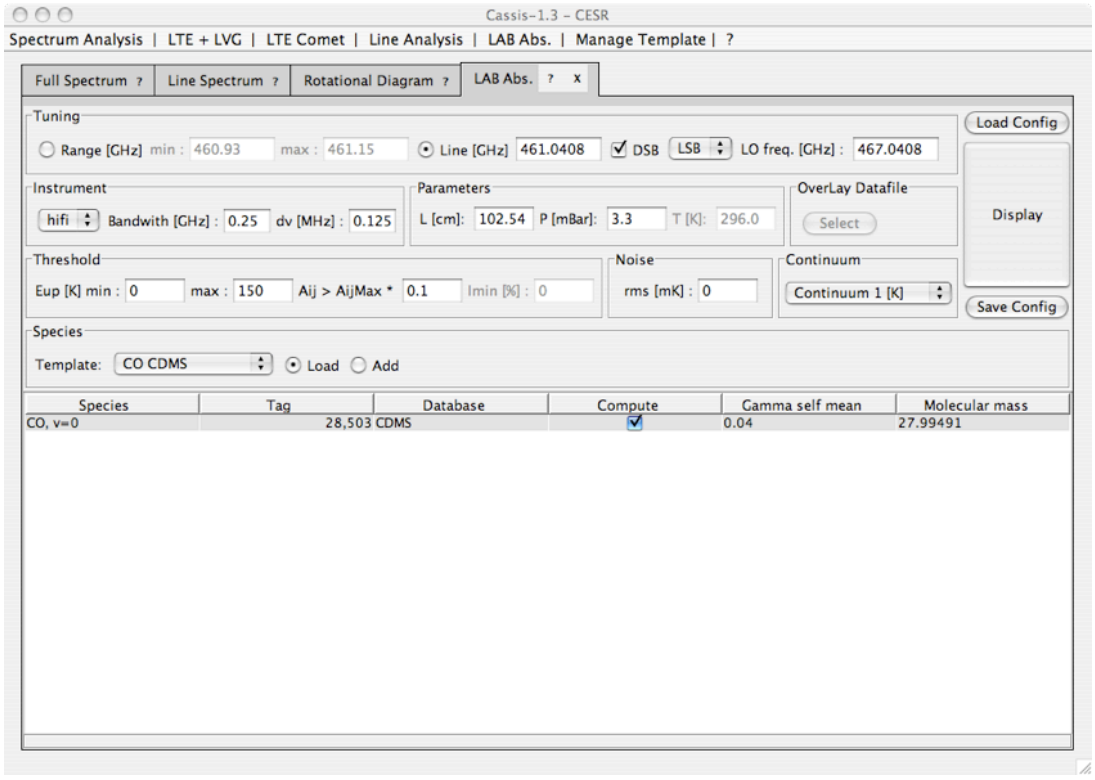
Spectra Prediction - zoom1



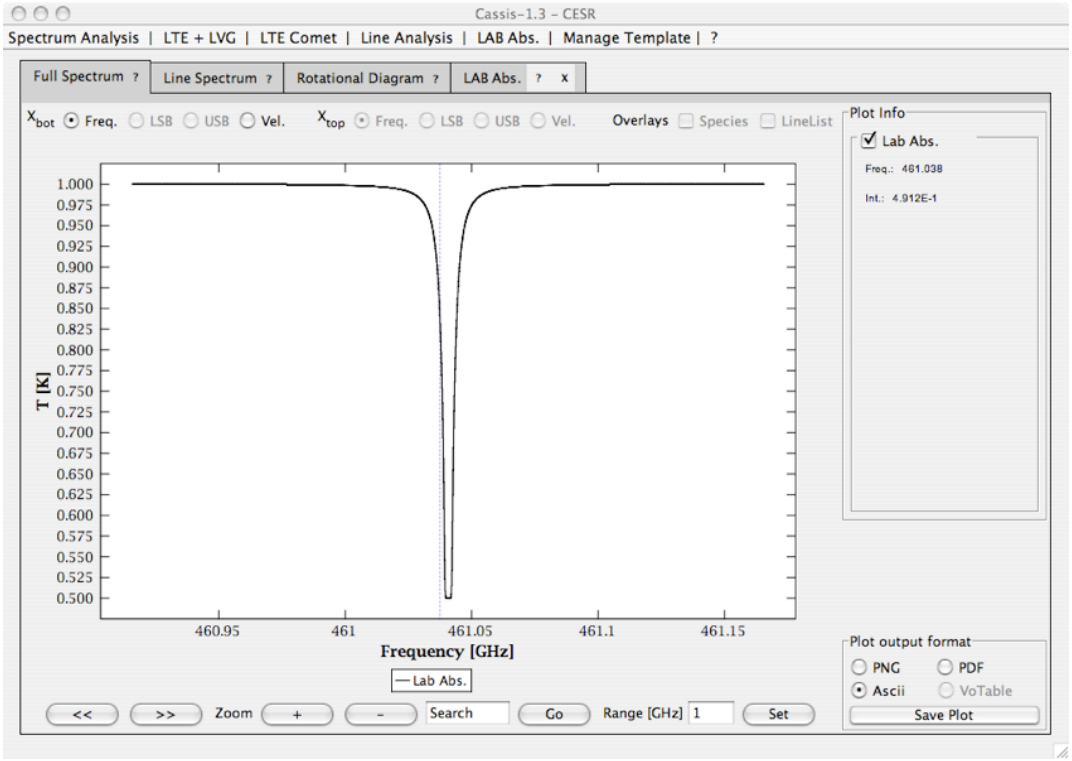
Spectra Prediction - zoom2



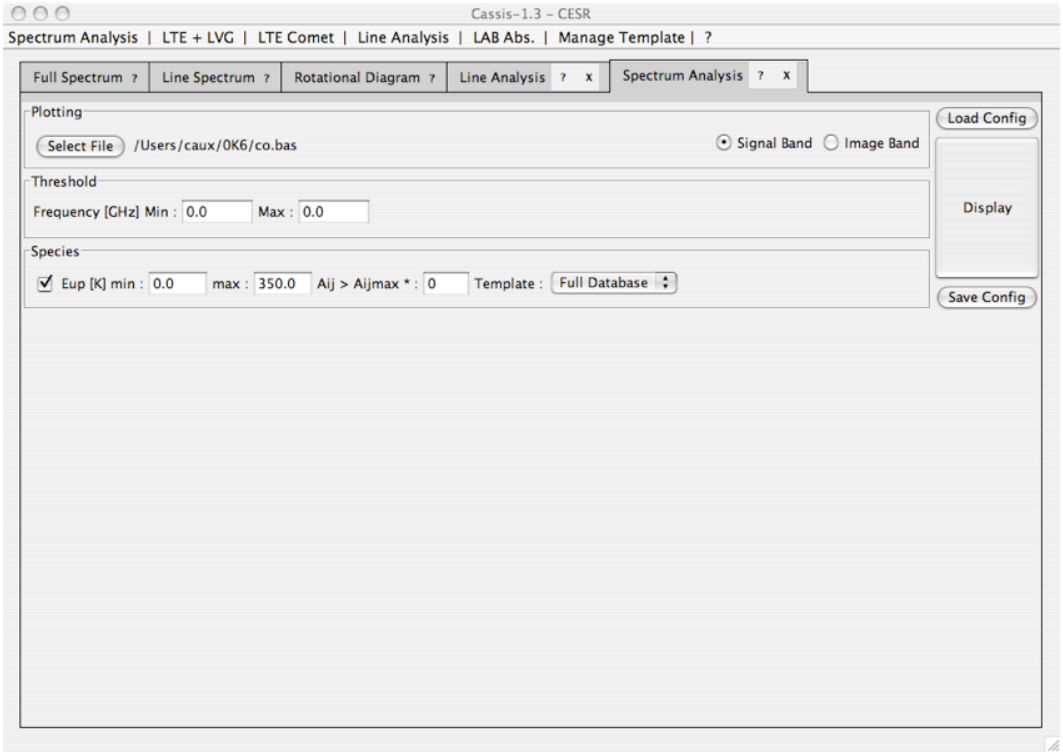
Lab-Abs



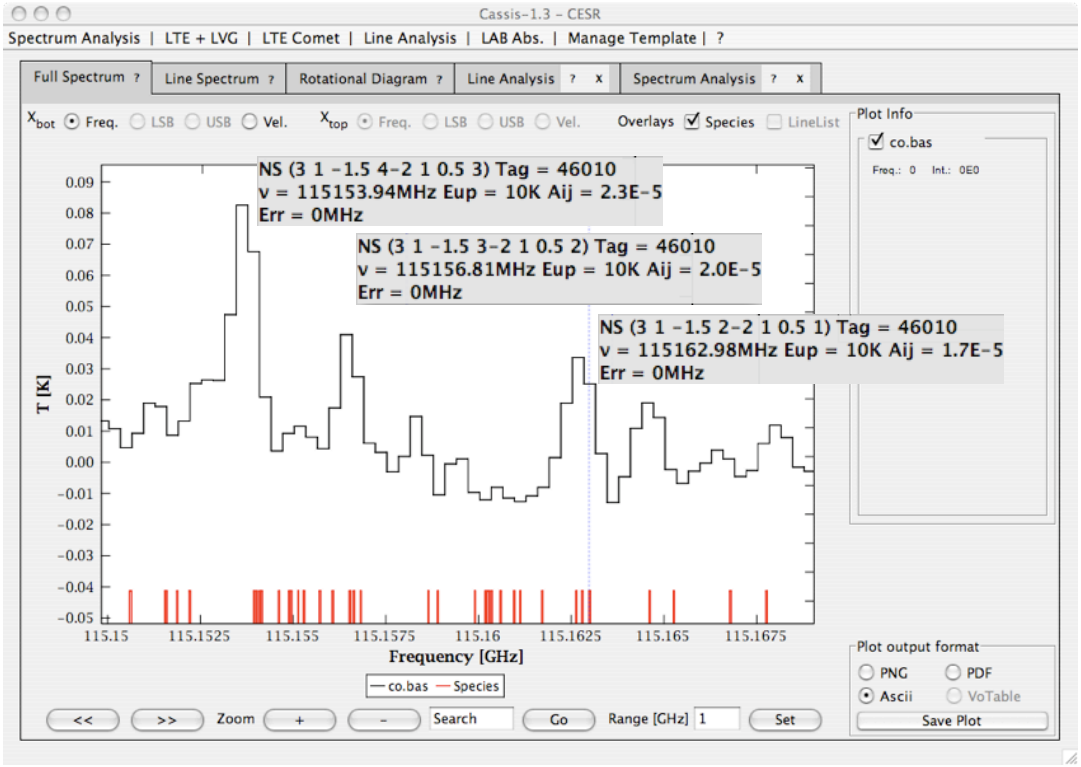
Lab-Abs



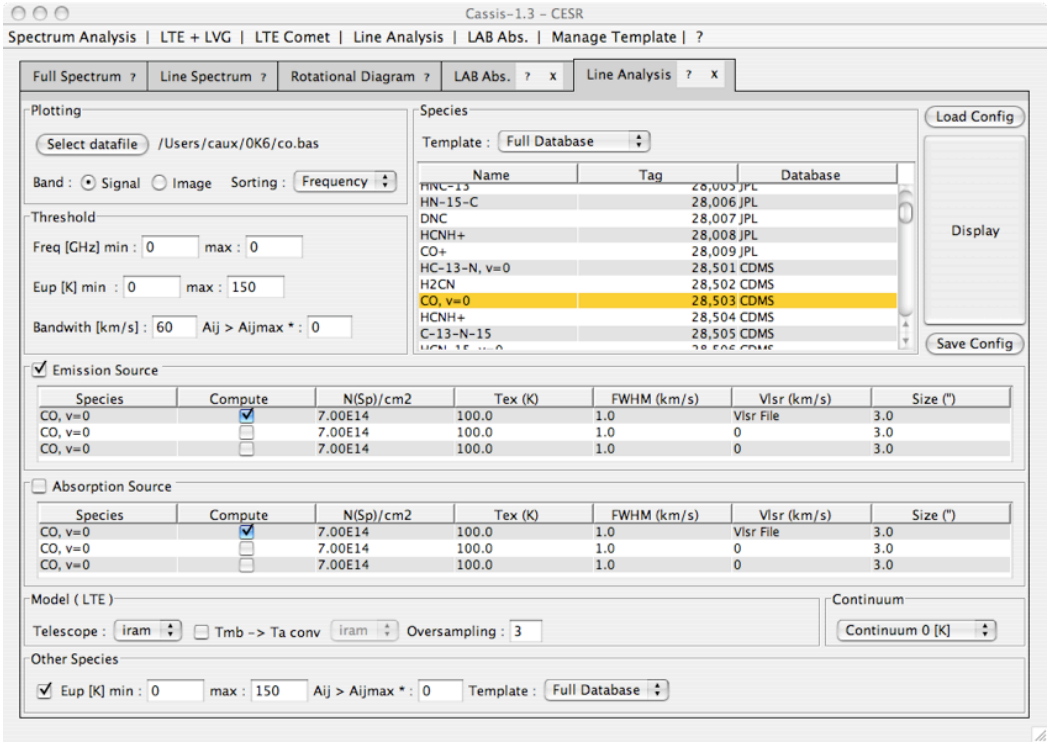
Spectrum Analysis



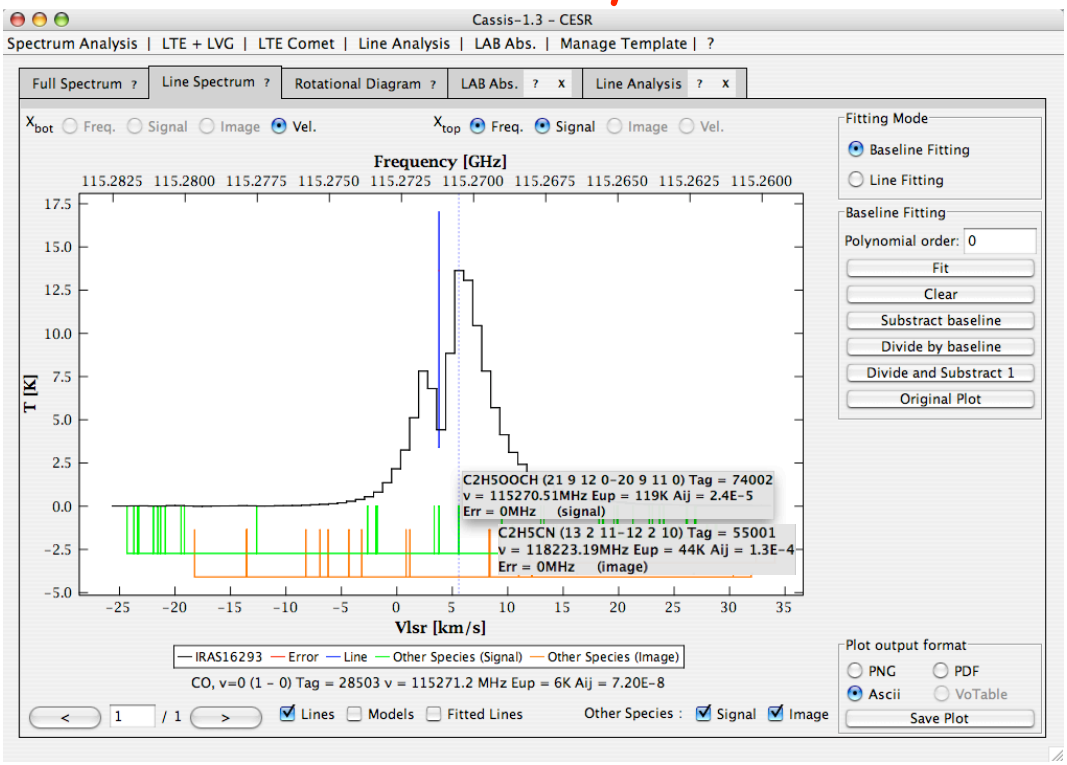
Spectrum Analysis



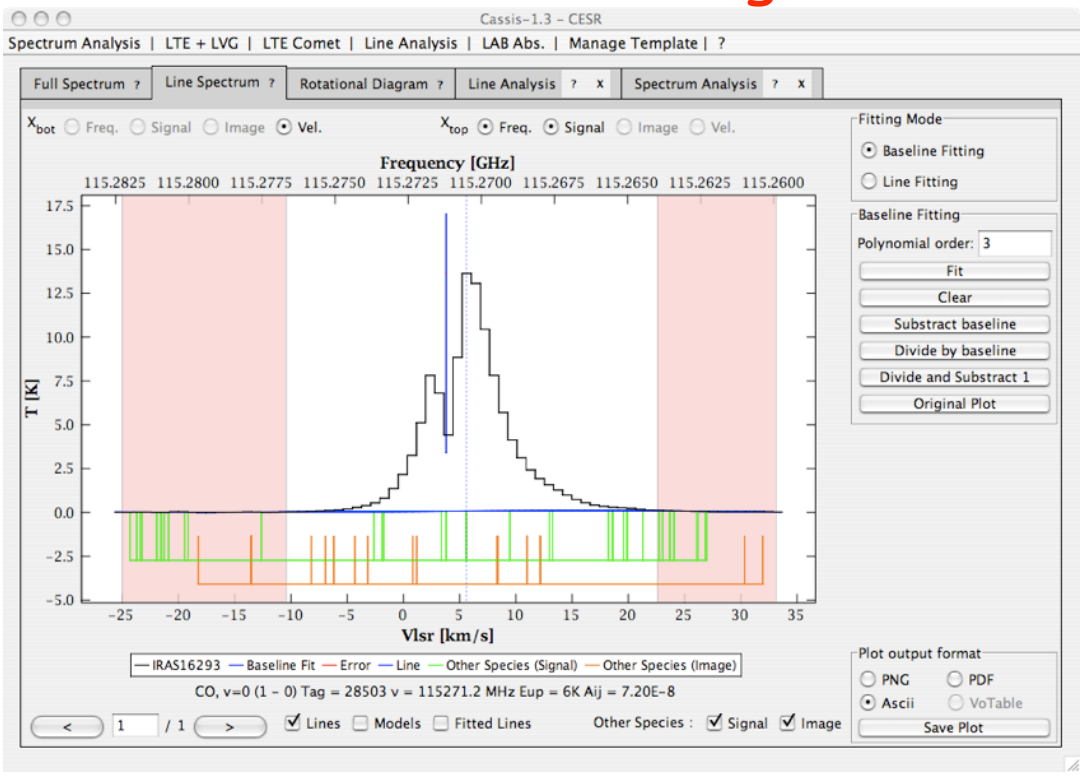
Line Analysis



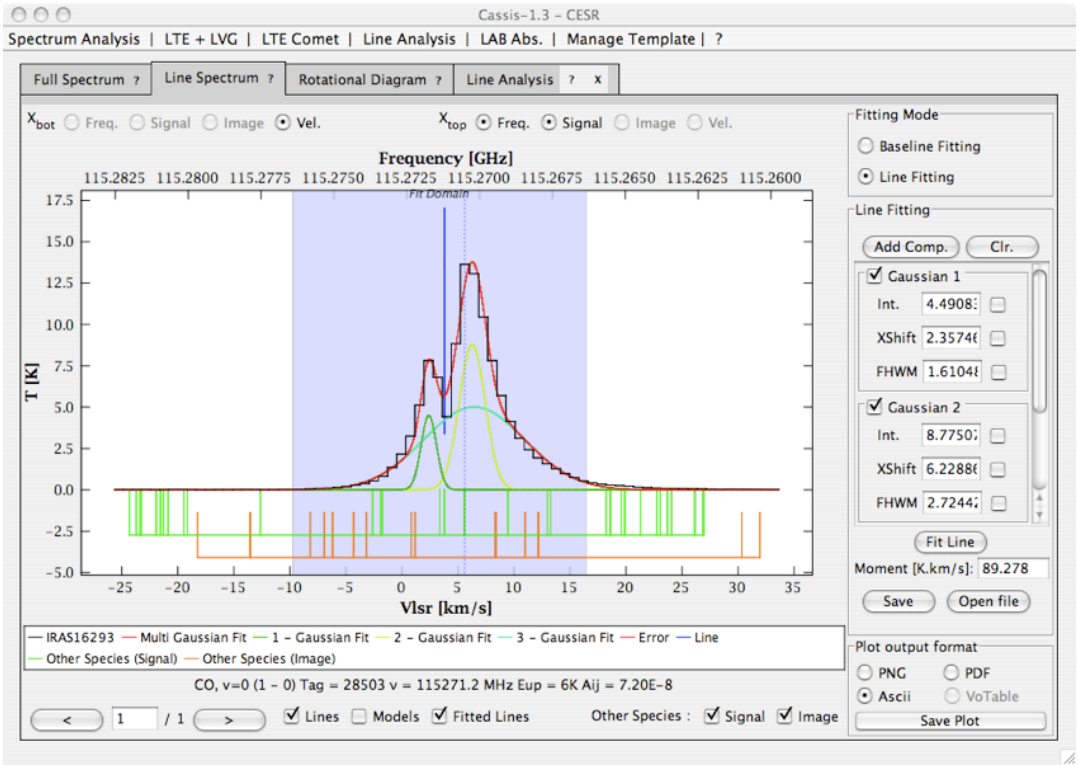
Line Analysis



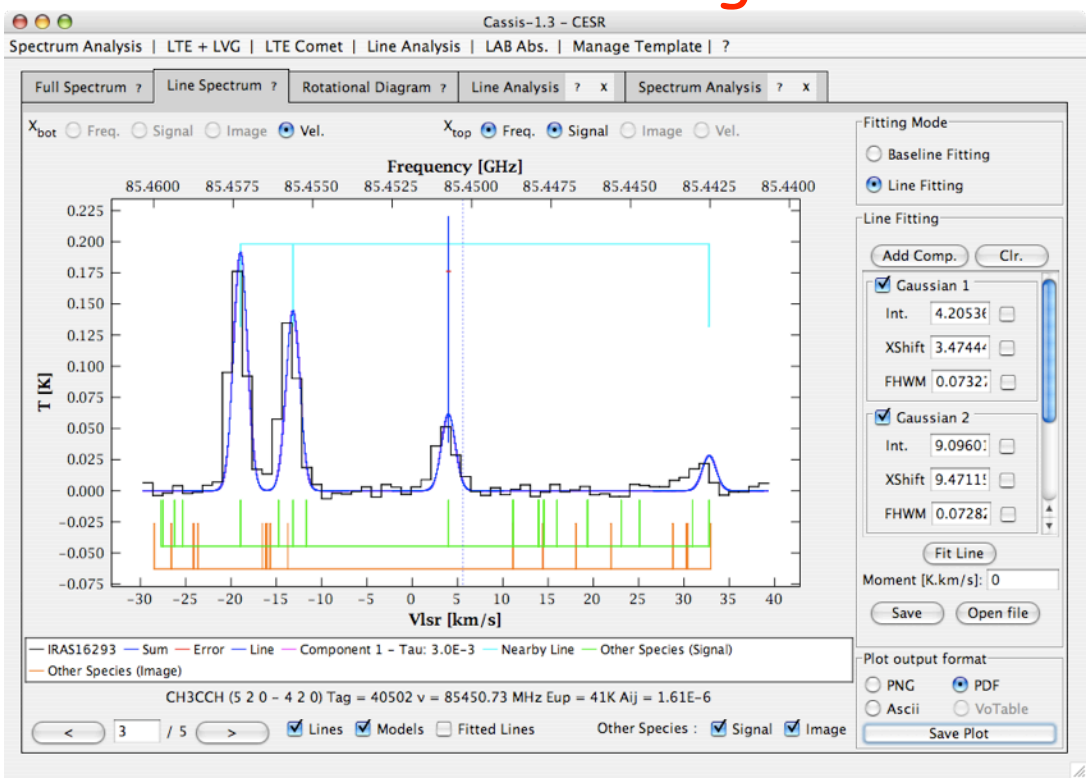
Baseline Fitting



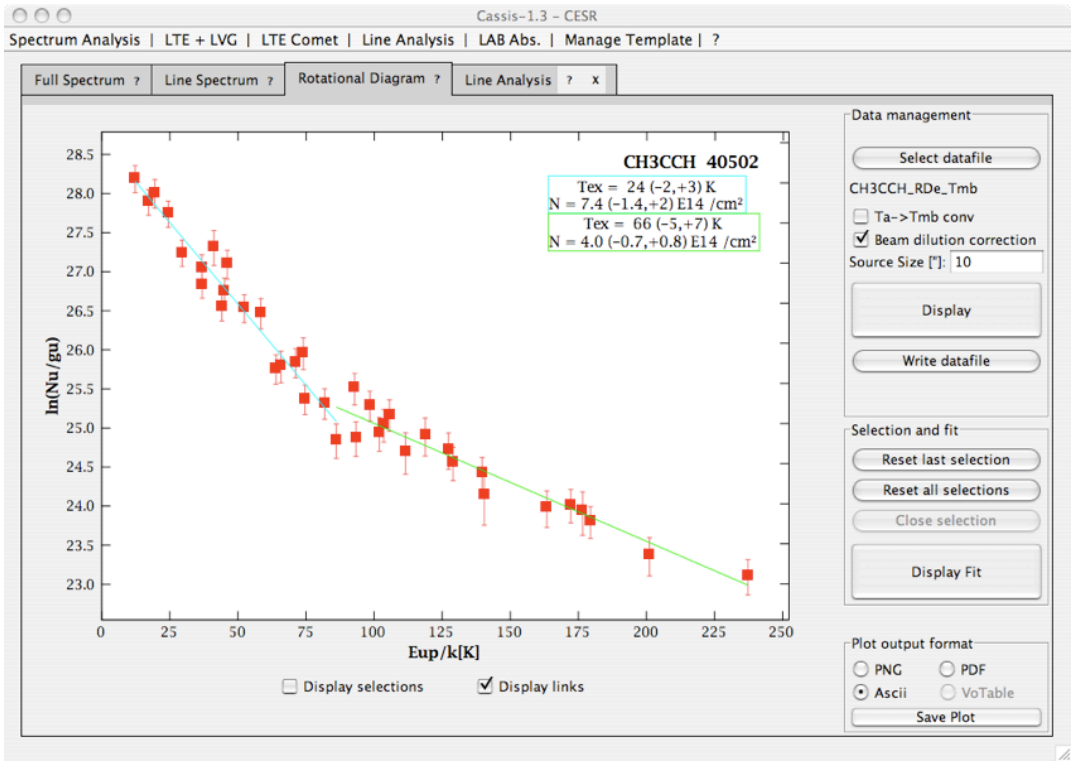
Line Fitting



Line Modeling



Rotational Diagram



Work plan in the coming months

- "Cleaning" and optimization of the code
- Optimization of the Client/Server version on the WEB
- Making Installers
- Plotting engine for a PDR model (others TBD)
- Full integration of the Radex model (others TBD)
  - Production of synthetic spectra
  - Link with collisional databases (Basecol...)
  - Data analysis tools
- Use of instrumental profiles
- What to do with unidentified lines ?
- AVO compatibility ??
- ...

AVO Compatibility

- Reading / Writing VO Tables
- What to do with the Database ?
- What to do to be linked with Basecol ?
- What about keeping the full power of CASSIS ?
  - Save CASSIS Objects ?
  - Save CASSIS Templates
  - Maintain a Database of CASSIS Objects and Templates ??