



AHELP for CIAO 3.4

identify

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Synopsis

List emission lines near given wavelength.

Syntax

```
identify(wavelength,[delta_wavelength, min_emissivity])
```

Description

'identify' lists wavelengths, specific transition levels, and peak emissivities and temperatures for emission lines within delta_wavelength (in Angstroms) of the given wavelength. Only lines with peak emissivities larger than min_emissivity are shown. In addition, as a convenience the relative intensity of each line is given under RelInt. This value is simply the emissivity of the line at its peak temperature divided by brightest of the listed lines (i.e., the one with the largest peak emissivity). The strongest line, therefore, will have RelInt = 1.000. See also the [GUIDE thread](#) showing how to use GUIDE with grating data to identify and describe emission lines.

identify is a GUIDE routine, which must be initialized using the require("guide") command in chips or sherpa. GUIDE uses the optional [ATOMDB](#) database, and this command will fail if the ATOMDB is not available on your system. Although both delta_wavelength and min_emissivity are optional, if min_emissivity is provided a value for delta_wavelength is also required.

Example 1

```
sherpa> require("guide")
GUIDE Initialized using ATOMDB v1.3.0
sherpa> identify(8.25,0.05,1.e-19)
Lambda -- Ion UL - LL Emissivity@ kT RelInt For More Info
Angstrom ph cm^3/s keV
8.2104 Ni XXIV 96- 8 1.68e-19 @ 1.366 0.022 describe(28,24,96,8)
8.2126 Fe XXII 157- 4 2.64e-19 @ 1.085 0.035 describe(26,22,157,4)
8.2326 Fe XXIV 12- 2 7.51e-18 @ 1.719 1.000 describe(26,24,12,2)
8.2329 Ni XXI 432- 1 3.30e-19 @ 0.862 0.044 describe(28,21,432,1)
8.2448 Ni XXIV 78- 6 2.28e-19 @ 1.366 0.030 describe(28,24,78,6)
8.2546 Fe XXI 786- 5 2.17e-19 @ 1.085 0.029 describe(26,21,786,5)
8.2563 Fe XXII 247- 10 3.00e-19 @ 1.085 0.040 describe(26,22,247,10)
8.2615 Fe XXI 784- 5 1.09e-19 @ 1.085 0.014 describe(26,21,784,5)
8.2685 Ni XXIII 248- 1 2.05e-18 @ 1.085 0.273 describe(28,23,248,1)
8.2850 Fe XXIV 9- 2 2.89e-18 @ 1.719 0.385 describe(26,24,9,2)
```

```
8.2966 Ni XIX 245- 1 1.85e-19 @ 0.685 0.025 describe(28,19,245,1)
8.2977 Fe XXII 229- 9 1.73e-19 @ 1.085 0.023 describe(26,22,229,9)
```

Here we listed all emission features with wavelengths between 8.20 and 8.30 Angstroms whose emissivity is larger than 10^{-19} ph cm³/s.

Example 2

```
chips> require("guide")
GUIDE Initialized using ATOMDB v1.3.0
identify(10.23)
Lambda -- Ion UL - LL Emissivity@ kT RelInt For More Info
Angstrom ph cm^3/s keV
10.2385 Ne X 7- 1 3.42e-17 @ 0.544 1.000 describe(10,10,7,1)
10.2396 Ne X 6- 1 1.71e-17 @ 0.544 0.500 describe(10,10,6,1)
```

List all emission features with wavelengths between 10.22–10.24 Angstroms, using the default `delta_wavelength` of 0.01 Angstroms and the default minimum emissivity of $1.e-18$ ph cm³/s.

Parameters

name	type	ftype	min	units	reqd
<u>wavelength</u>	float	input			yes
<u>delta_wavelength</u>	float	input		Angstrom	no
<u>min_emissivity</u>	float	input	0	ph cm ³ /s	no

Detailed Parameter Descriptions

Parameter=wavelength (float required filetype=input)

The central wavelength used for the list.

Parameter=delta_wavelength (float not required filetype=input units=Angstrom)

The +/- width of the wavelength region to be printed; defaults to +/- 0.01 Angstroms.

Parameter=min_emissivity (float not required filetype=input min=0 units=ph cm³/s)

The minimum emissivity of the lines to be output; default is 10^{-18} ph cm³/s.

Bugs

See the [Sherpa bug pages](#) online for an up-to-date listing of known bugs.

See Also

guide

[describe](#), [ionbal](#), [mdl2latex](#), [strong](#)

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URL:
<http://cxc.harvard.edu/ciao3.4/identify.html>
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