Aug18-06 ADAS Bulletin

Items:

1. ADAS release v2.11
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4. Code and data updates in release v2.11.

1. ADAS release v2.11.

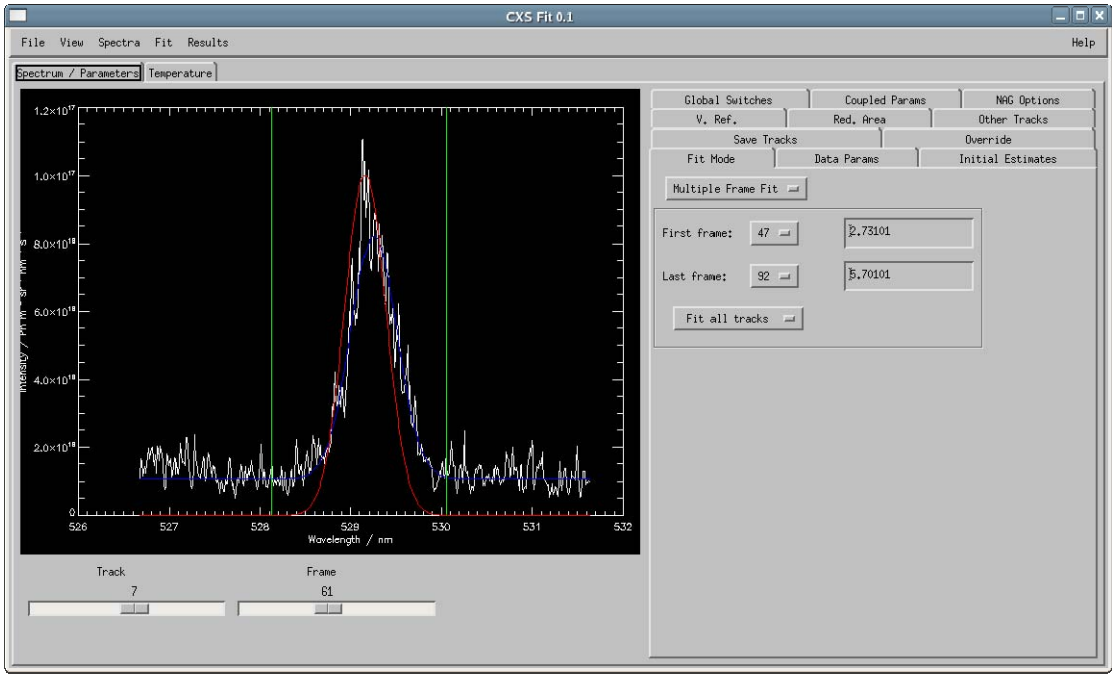
This bulletin and release is not quite as I expected. At the last bulletin (**18dec05**) I indicated that the present release would be release v3.0 and would contain the full heavy species extension. I am sorry to disappoint. The heavy species extension is now pretty well complete and the substantive data generation is underway. However, as mentioned in the previous bulletin, there are numerous knock-on effects – especially changes to core subroutines such as *xxdata_04* - and extensions to data class prescriptions - especially structured comment sections in data classes such as *adf15* for automatic superstage processing. These completions have come rather recently, with insufficient time to follow through and verify all the consequential changes in the many dependent ADAS codes. So we have chosen to do a conventional correction release now, v2.11, and intend to follow it soon with v3.0 once we are confident that the changes will not make other parts of ADAS 'fall over'.

Also we have put substantial ADAS staff effort into CXSFIT and OPEN-ADAS in the last six months. It is the developmental version of OPEN-ADAS which has pointed up small errors in data sets which we have corrected in this release. Since these new codes and their deployment are important issues for the ADAS workshop in November, I wished to explain in the bulletin a little about how these tasks are coming along.

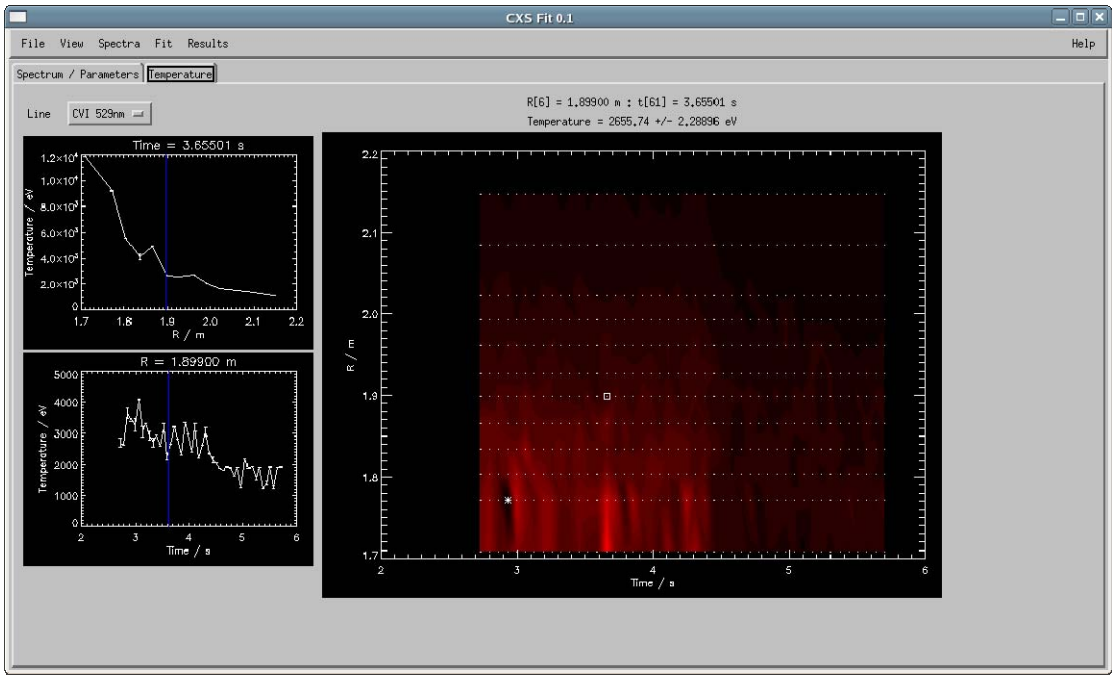
2. CXSFIT

CXSFIT is of course the redevelopment of Manfred's KS4FIT in an updated, IDL-based form with clear decoupling of specific machine issues from core analysis. It will be suitable for use in CXS analysis everywhere, once appropriate local interface routines are provided. It was initiated as a shared development by FZ-Juelich, IPP Garching, EFDA-JET/UKAEA Culham and ADAS with the handling of all the coding, maintenance etc undertaken by ADAS. Allan Whiteford is doing the actual implementation.

CXSFIT is one of these special codes under the ADAS umbrella, which is not part of the general ADAS release. It is too specialised and needs close collaboration with staff at laboratories which plan to use it, so that the interfacing procedures can be put in place. It is, though, an ADAS development for the use of ADAS participants if they wish it. CXSFIT is now working successfully at IPP Garching and EFDA-JET and I must say that we are rather pleased with it. In my view, Allan has done an excellent job and has put in great efforts to sort out all the myriads of little issues. He, Manfred, Lorne, Andy, Klaus-Dieter, Costanza, Jasmine and Carine and have spent large amounts of time closeted together on these matters. Below, we show just two of the screens – one showing the actually spectral fit of a CXS line spectral interval and the many control tabs, and the other showing the spatial & temporal traces of the extracted CXS temperature and its surface. Allan will talk more about CXSFIT at the ADAS workshop and associated work-in in November, but the message I wish to transmit in the bulletin is that CXSFIT is now available and the development team are very willing to enable ADAS participants worldwide to use it if they wish.



CXSFIT: Spectral fit for a single track and time slice of CXS emission interval for the CVI(n=8-7) feature – EFDA-JET discharge.

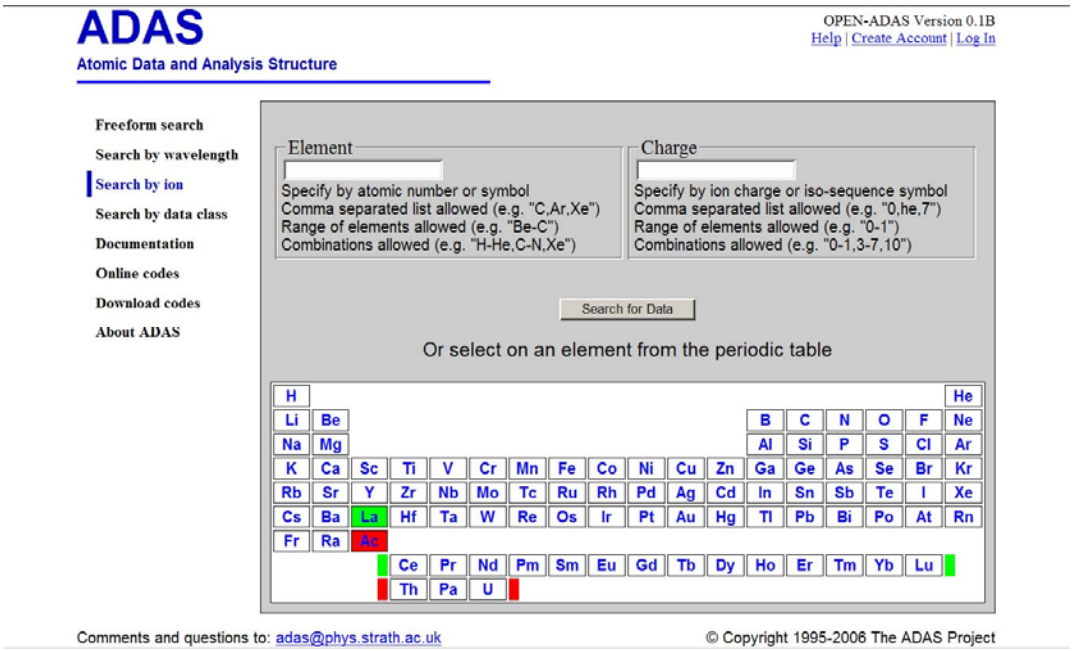


CXSFIT: Parameter extraction from complete mutli-frame, multi-track fit – ion temperature from an EFDA-JET discharge.

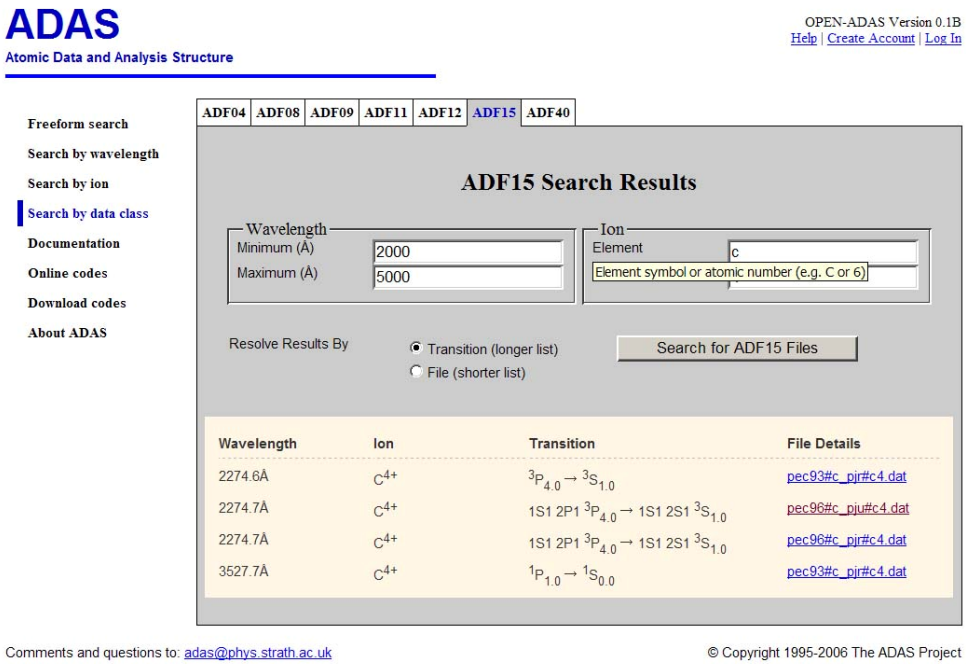
3. OPEN-ADAS

Alan started work on the project, which is partly sponsored by IAEA, in June and has made rapid progress. You will recall the broad plan for OPEN-ADAS which I circulated with the last bulletin. Once we got down to detailed discussions of our various concepts of a user-friendly access to the data and also once Allan examined the programming issues in depth, we decided on a different appearance and layering for the user interface although the underlying structural organisation is as originally

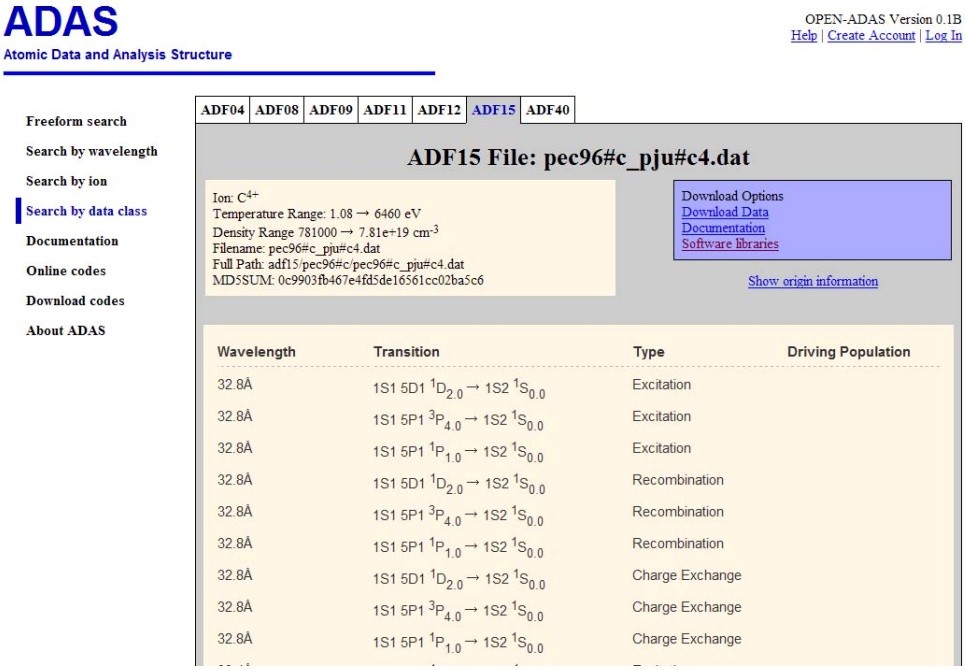
planned. Coming to the user interface, it was clear that, since it had to be web-based and platform independent, it should be coded in HTML. The scanning and textual analysis of datasets and dataset names for the setting up of the tag files is handled in PERL. This proved to be extremely fast and effective. It turns that it will only be a modest task to scan the whole data base to re-generate the tag files for each release – all though it does require many thousands of lines of code! Also Allan has linked the tag files to MYSQL to give normal database facilities. At the moment we have focussed on a few of the main ADAS data formats (*adf04*, *ad09*, *adf15*) as we have evolved the look and feel of the interface. I have shown some samples below. We are able to come in very directly by element and ion, wavelength range etc as shown in the first screen dump. The menu on the left shows the entry routes.



Once we are into a data format such as *adf15*, we can zero down on the actual transitions and datasets available by element, ion and wavelength range – this aspect varies dependent on the data format. I show this in the screen-shot below for *adf15*.



When we select the actual dataset, we obtain the key information as shown in the last screen-shot below. Note the summary information at the top left, also the actions possible at the top right. Also just below the blue box at the top right, note the 'Show origin information' field. This brings up the antecedents and descendents of the dataset, authorship and so on. There is still a lot to to do to complete all the facilities, but we feel pretty pleased so far with the interface and its speed. Allan will talk more about OPEN-ADAS at the workshop, but I do feel pretty confident now that it will provide a helpful contribution to making available the public domain data parts of ADAS as well has satisfying the long expressed need by ADAS members for a 'mechanism for selecting interactively the data for ADAS codes and hopefully finally answerering the criticism of knowing what ADAS data to use' – to paraphrase my comments from the last bulletin.



4. Code and data updates in v2.11.

Corrections and additions to codes (ADAS v2.10 to ADAS v2.11)

C.1 Fixed two small errors in offline version of *adas310* - one stopped a minimum n shell being passed in (but the default was sensible so should not have caused a problem), the other caused occasional problems when requesting an *adf21* file due to files not being flushed by fortran before IDL acted on them.

C.2 Three development files, *t.pro*, *test.pro* and *start.pro* were in the *adas802* directory. As these names are generic and may conflict with users files they have been removed. They should never have been in the central distribution.

C.3 Increased *itdimd* to 2001 (so that 2000 Te/Ne pairs can now be read in one go) in *readadf11.for*. This should have been changed at the same time as *ntdim* (see C.13 from last release).

C.4 Add the *fulldata* output structure to *read_adf13.pro* which means that *xxdata_13.for* and *xxdata_13.pro* routines are also now available.

C.5 Modified *run_310* so that the finish signal is only sent to IDL after the last passing file has been written.

C.6 As part of bringing the new beryllium data into the GCR project a number of issues with the ADAS processing codes arose:

- An underflow error in *adas204* which caused *NaN* to be written to the projection matrix (*adf17*) was corrected. This only affected Sun and g77 binaries.

- The opportunity was taken to upgrade *adas208* a little. The main difference is that the strongest 50 (or as many dictated by wavelength and A-value limits) photon emissivity coefficients as well as the accompanying *sxb* coefficients are written. This is in contrast to the previous behaviour where the first 50 coefficients were written.

- The new standard way of accessing specific ion file, via a call to *xxdata_04*, is now used.

- At low temperatures there was a problem in interpolating the *sxb* data due to zero values. A new correction routine to force an exponential fall-off rather than setting the values to zero was introduced.

- The dimensions were increased to 150 levels and 5500 transitions. Note that this is still not sufficient to process *adf04* from the high Z project but *adas810* will accommodate these datasets.

- The projection reading routine now writes its success status to the screen. The user need no longer check the *paper.txt* output to see if adding projection was successful.

- A potential error in evaluating the 'S-line' ionisation rate at low temperatures was fixed. This only occurred if the rate was effectively zero.

- The options for how to extrapolate the resolved *adf11* data were made the same as those used to generate the unresolved data.

These changes should not affect the data already present but we have planned a comprehensive review of all the GCR data this year as part of the code changes coming from the heavy element analysis.

C.7 *run_adas505.pro* has been added. The non-interactive version does not interrogate the *adf14* datasets but is used to generate the H-line data for inclusion in the *adf04* specific ion datasets. The purpose of the non-interactive version is to allow a more rapid exploration of the differences in donor and receiver temperature behaviour.

C.8 Modified *r8gav.for* and *r8giiiav.for* so that they do not contain an external statement, which caused problems on linux/g77 when doing a *–ladaslib*.

C.9 Add the *fulldata* output structure to *read_adf24.pro* which means that *xxdata_24.for* and *xxdata_24.pro* routines are also now available.

C.10 An IDL version of the *ceevth.for* routine is available. This generates a rate coefficient from charge exchange cross sections (from *read_adf24* or *read_adf01*) for four cases: mono-energetic donor/thermal receiver, thermal donor/mono-energetic receiver, thermal donor/thermal receiver (same temperature) and a mono-energetic case which converts input cross-sections tabulated at a set of energies/amu to output cross-sections tabulated a different set of energies/amu.

C.11 The labelling of the charge exchange levels (H-lines) in the *fulldata* structure from *read_adf04.pro* was incorrect. Also add the metastable parents to the *fulldata* structure.

C.12 *run_adas403.pro* enables the partial GCR coefficients from *adas208* to be integrated into the *adf10* data via a stand alone process. This routine was missed when the repository was converted from SCCS to CVS.

C.13 *run_adas404.pro* is the non-interactive version of *adas404* used to generate *adf11* data (metastable resolved or unresolved) from the partial adf10 datasets. Selective *adf10* inputs are

possible via optional parameters. No checking of these options is done as we assume you will know what you are doing in this case!

C.14 Some minor changes to the *adas408* code when generating filtered continuum power (*prb*) files. More checks are included which slows the code a little.

C.15 Change behaviour of *adas503* so that temperatures don't need to be in ascending order. Non-monotonically increasing temperatures may have a knock-on effect to the plotting routines but there is no good reason to limit the temperatures like this. This also fixes a problem when selecting default *Ne* and then trying to edit the table.

C.16 Change check for minor version number of '3' to a full check for a version of '5.3' on startup. Checking the minor version number only was causing ADAS to refuse to function on IDL 6.3.

C.17 In *write_adf04.pro* check for valid 'R', 'S' or 'H' data before writing the file.

C.18 Added more routines from *adas804* to l*ibadas8xx*. These are routines underpinning the conversion of collision strengths to Maxwell averaged effective collision strengths.

C.19 Add an IDL version of *ngffmh*, which calculates the Maxwell and frequency averaged free-free Gaunt factor. The IDL version allows a vector input whereas the fortran version is limited to a single input value.

C.20 Updated version number to 2.11

Corrections and updates to data (ADAS v2.10 to ADAS v2.11)

D.1 The was a format error in the ionisation dataset, szd93#b3_be.dat. It was not present in the individual ion files.

D.2 Beryllium has been added to the 96 GCR set of data. The principal excitation came from Connor Ballance et al (Phys Rev A68, 062705 (2003)) and ionisation data from James Colgan (Phys Rev A68, 032712 (2003)). These data are archived in the appropriate iso-electonic collections:

adf04/belike/belike_cpb03_ls#be0.dat
adf04/lilike/lilike_cpb03_ls#be1.dat
adf04/helike/helike_cpb03_ls#be2.dat
adf04/hlike/hlike_cpb03_ls#be3.dat

with the ionisation in *adf07* and *adf23* collections:

adf07/szd03#be/szd03#be_be.dat
adf23/sdl03#be/sdl03#be_be0.dat etc.

The *sdl* identifier denotes Stuart Loch who generated the rates and assembled the data.

The *adf04* data was supplemented with *adas801* generated extra levels and A-values, NIST energy values and ionisation potentials. These data are archived in the *adf04/adas#4* directory (*cpb03_ls#be0.dat* etc.).

The *copmm#4*, *adas801* generated, isonuclear set has been updated with newer runs.

The dielectronic data used is from adf09/nrb93#<> collection to keep with the previous work.

All other supporting datasets (adf25, adf18, adf08) necessary for a GCR calculation are in the expected places.

The derived data is archived under the 96 identifier, giving:

adf11/acd96/acd96_be.dat etc. (for *acd*, *scd*, *prb* and *plt*)
adf11/acd96r/acd96r_be.dat etc (for *acd*, *scd*, *qcd*, *xcd*, *plt* and *prb* classes).

Again the *adf10* isoelectronic partial data is added to the existing datasets.

The photon emissivity and ionisations per photon are archived in *adf15/pec96#be* and *adf13/sxb96#be* in metastable resolved and unresolved forms.

D.3 Germanium has been added to the system. Baseline *adf04* data at LS and IC resolutions is in *adf04/copmm#32*. The *adf34* driver files can be found in *adf34/germanium*. New '89' style *adf11* data along with the *adf03* driver file is also added.

D.4 Renamed files in *adf04/belike*:

belike_hps89be1.dat	->	*belike_hps89a#be0.dat*
belike_hps89be2.dat	->	*belike_hps89b#be0.dat*
belike_hps89be.da t	->	*belike_hps89c#be0.dat*
belike_hps89be#.dat	->	*belike_hps89d#be0.dat*

D.5 Renamed *adas/adf04/copmm#16/ls#so.dat* to *ls#s0.dat*

D.6 Added '+' to first line of *adf04/lilike/lilike_dcg01#li0.dat*
i.e. "Li 0" -> "Li+ 0"

D.7 Removed file: *adf04/helike/helike_betest.dat*

D.8 Changed z0 to 2 in the first lines of:
adf04/helike/helike_fujl78he.dat
adf04/helike/helike_fujh78he.dat

D.9 Removed *adf04/helike/helike_hpslhex.dat*. The file *helike_hpsl91he.dat* contains the same data but with some corrected A-values and a more standard formatting and filename.

D.10 Removed *adf04/blike/blike_sa1988ni.dat.*

D.11 Gave *adf04/blike/blike_hps96#c1l.dat* UNIX rather than DOS line breaks

D.12 Removed *adf04/blike/blike_jl96#ne5j.dat%*.

D.13 Renamed files in *adf04/nlike*:

hps1985o.dat	->	*nlike_hps85#o1.dat*
wjd92#o.dat	->	*nlike_wjd92#o1.dat*
jl1990o.dat	->	*nlike_jl90#o1.dat*

D.14 Removed *adf04/nlike/g1981o.dat*.

D.15 Added correct data termination block to *nlike_hps85#o1.dat*.

D.16 Changed Z to 2 and Z1 to 3 in:
adf04/copmm#5/ls#b2.dat
adf04/copmm#5/jj#b2.dat

D.17 Made an *adf05/clike* directory.

D.18 Moved adf05 files which were in the adf04 directroy structure to their appropriate place, specifically:

adf04/lilike/lilike_gcs1981.dat	-> *adf05/lilike/*
adf04/helike/helike_spc1978.dat	-> *adf05/helike/*
adf04/clike/clike_bfd1980.dat	-> *adf05/clike/.*

D.19 Updated *adf09/nrbza00#b/za00#b_k14ls22.dat* which actually contained IC data with one which now contains LS data.

D.20 Added datablock terminators (" -1 -1") to:
adf04/belike/belike_hps1986c.dat

adf04/belike/belike_hps89d#be0.dat
adf04/belike/belike_hps89b#be0.dat
adf04/belike/belike_bkt1988c.dat
adf04/belike/belike_wd1988kr.dat
adf04/belike/belike_jl1986si.dat
adf04/belike/belike_d1978o.dat
adf04/belike/belike_wd88rvkr.dat
adf04/belike/belike_bb1987c.dat
adf04/belike/belike_hps89a#be0.dat
adf04/belike/belike_jl1987ne.dat
adf04/hlike/hlike_agg1983h.dat
adf04/hlike/hlike_ni.dat
adf04/hlike/hlike_cmcd83h.dat
adf04/lilike/lilike_rh1989c.dat
adf04/lilike/lilike_hps89be.dat
adf04/lilike/lilike_cmcw83o.dat
adf04/helike/helike_hps89be.dat
adf04/helike/helike_adw02#o6.dat
adf04/helike/helike_tex93#he.dat
adf04/helike/helike_kvil93he.dat
adf04/clike/clike_jl1987ne.dat
adf04/clike/clike_hps1986o.dat
adf04/blike/blike_wd88rvkr.dat
adf04/blike/blike_wd1988fe.dat
adf04/blike/blike_wd1988kr.dat
adf04/blike/blike_hps1986c.dat
adf04/blike/blike_wd1988ni.dat
adf04/nalike/nalike_b72mg.dat
adf04/nalike/nalike_bd78mg.dat

D.21 Updated *adf00* ground configurations and ionisation potentials from NIST also addressed some formatting issues.

D.22 Updated *adf09/nrbdmm00#n/nrb00#n_o1ic223.dat* to have 5 parent states

D.23 Added

adf09/nrbdmm00#n/nrb00#n_al6ic22.dat
adf09/nrbdmm00#n/nrb00#n_al6ic23.dat
adf09/nrbdmm00#n/nrb00#n_al6ls22.dat
adf09/nrbdmm00#n/nrb00#n_al6ls23.dat
adf09/nrbdmm00#n/nrb00#n_ar11ic22.dat
adf09/nrbdmm00#n/nrb00#n_ar11ic23.dat
adf09/nrbdmm00#n/nrb00#n_ar11ls22.dat
adf09/nrbdmm00#n/nrb00#n_ar11ls23.dat
adf09/nrbdmm00#n/nrb00#n_ca13ic22.dat
adf09/nrbdmm00#n/nrb00#n_ca13ic23.dat
adf09/nrbdmm00#n/nrb00#n_ca13ls22.dat
adf09/nrbdmm00#n/nrb00#n_ca13ls23.dat
adf09/nrbdmm00#n/nrb00#n_cl10ic22.dat
adf09/nrbdmm00#n/nrb00#n_cl10ic23.dat
adf09/nrbdmm00#n/nrb00#n_cl10ls22.dat
adf09/nrbdmm00#n/nrb00#n_cl10ls23.dat
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adf09/nrbdmm00#n/nrb00#n_co20ic23.dat
adf09/nrbdmm00#n/nrb00#n_co20ls22.dat
adf09/nrbdmm00#n/nrb00#n_co20ls23.dat
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adf09/nrbdmm00#n/nrb00#n_cr17ic23.dat
adf09/nrbdmm00#n/nrb00#n_cr17ls22.dat

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adf09/nrbdmm00#n/nrb00#n_cu22ic23.dat
adf09/nrbdmm00#n/nrb00#n_cu22ls22.dat
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adf09/nrbdmm00#n/nrb00#n_fe19ls22.dat
adf09/nrbdmm00#n/nrb00#n_fe19ls23.dat
adf09/nrbdmm00#n/nrb00#n_k12ic22.dat
adf09/nrbdmm00#n/nrb00#n_k12ic23.dat
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adf09/nrbdmm00#n/nrb00#n_sc14ic22.dat
adf09/nrbdmm00#n/nrb00#n_sc14ic23.dat
adf09/nrbdmm00#n/nrb00#n_sc14ls22.dat
adf09/nrbdmm00#n/nrb00#n_sc14ls23.dat
adf09/nrbdmm00#n/nrb00#n_si7ic22.dat
adf09/nrbdmm00#n/nrb00#n_si7ic23.dat

adf09/nrbdmm00#n/nrb00#n_si7ls22.dat
adf09/nrbdmm00#n/nrb00#n_si7ls23.dat
adf09/nrbdmm00#n/nrb00#n_ti15ic22.dat
adf09/nrbdmm00#n/nrb00#n_ti15ic23.dat
adf09/nrbdmm00#n/nrb00#n_ti15ls22.dat
adf09/nrbdmm00#n/nrb00#n_ti15ls23.dat
adf09/nrbdmm00#n/nrb00#n_v16ic22.dat
adf09/nrbdmm00#n/nrb00#n_v16ic23.dat
adf09/nrbdmm00#n/nrb00#n_v16ls22.dat
adf09/nrbdmm00#n/nrb00#n_v16ls23.dat
adf09/nrbdmm00#n/nrb00#n_xe47icr22.dat
adf09/nrbdmm00#n/nrb00#n_xe47icr23.dat
adf09/nrbdmm00#n/nrb00#n_zn23ic22.dat
adf09/nrbdmm00#n/nrb00#n_zn23ic23.dat
adf09/nrbdmm00#n/nrb00#n_zn23icr22.dat
adf09/nrbdmm00#n/nrb00#n_zn23icr23.dat
adf09/nrbdmm00#n/nrb00#n_zn23ls22.dat
adf09/nrbdmm00#n/nrb00#n_zn23ls23.dat

Although there was nothing wrong with the *dmm00 adf09* data, it only gave IC/ICR and only M=4 metastables. The new data has re-run everything so as to get M=5, and so has a full set of LS data as well. ICR below Zn was not rerun (the old data switched from IC to ICR at Sc) as Zn was the switch for all other sequences. dmm data ICR Sc-Cu still the recommendation, but nrb data should be used for everything else.

D.24 Added files:

adf27/dr/nlike/nrb00#n/al6ic22-2.dat
adf27/dr/nlike/nrb00#n/al6ic22-n.dat
adf27/dr/nlike/nrb00#n/al6ic22_str.dat
adf27/dr/nlike/nrb00#n/al6ic23-3e.dat
adf27/dr/nlike/nrb00#n/al6ic23-3o.dat
adf27/dr/nlike/nrb00#n/al6ic23-ne.dat
adf27/dr/nlike/nrb00#n/al6ic23-no.dat
adf27/dr/nlike/nrb00#n/al6ic23_str.dat
adf27/dr/nlike/nrb00#n/ar11ic22-2.dat
adf27/dr/nlike/nrb00#n/ar11ic22-n.dat
adf27/dr/nlike/nrb00#n/ar11ic22_str.dat
adf27/dr/nlike/nrb00#n/ar11ic23-3e.dat
adf27/dr/nlike/nrb00#n/ar11ic23-3o.dat
adf27/dr/nlike/nrb00#n/ar11ic23-ne.dat
adf27/dr/nlike/nrb00#n/ar11ic23-no.dat
adf27/dr/nlike/nrb00#n/ar11ic23_str.dat
adf27/dr/nlike/nrb00#n/ca13ic22-2.dat
adf27/dr/nlike/nrb00#n/ca13ic22-n.dat
adf27/dr/nlike/nrb00#n/ca13ic22_str.dat
adf27/dr/nlike/nrb00#n/ca13ic23-3e.dat
adf27/dr/nlike/nrb00#n/ca13ic23-3o.dat
adf27/dr/nlike/nrb00#n/ca13ic23-ne.dat
adf27/dr/nlike/nrb00#n/ca13ic23-no.dat
adf27/dr/nlike/nrb00#n/ca13ic23_str.dat
adf27/dr/nlike/nrb00#n/cl10ic22-2.dat
adf27/dr/nlike/nrb00#n/cl10ic22-n.dat
adf27/dr/nlike/nrb00#n/cl10ic22_str.dat
adf27/dr/nlike/nrb00#n/cl10ic23-3e.dat
adf27/dr/nlike/nrb00#n/cl10ic23-3o.dat
adf27/dr/nlike/nrb00#n/cl10ic23-ne.dat
adf27/dr/nlike/nrb00#n/cl10ic23-no.dat
adf27/dr/nlike/nrb00#n/cl10ic23_str.dat
adf27/dr/nlike/nrb00#n/co20ic22-2.dat

adf27/dr/nlike/nrb00#n/co20ic22-n.dat
adf27/dr/nlike/nrb00#n/co20ic22_str.dat
adf27/dr/nlike/nrb00#n/co20ic23-3e.dat
adf27/dr/nlike/nrb00#n/co20ic23-3o.dat
adf27/dr/nlike/nrb00#n/co20ic23-ne.dat
adf27/dr/nlike/nrb00#n/co20ic23-no.dat
adf27/dr/nlike/nrb00#n/co20ic23_str.dat
adf27/dr/nlike/nrb00#n/cr17ic22-2.dat
adf27/dr/nlike/nrb00#n/cr17ic22-n.dat
adf27/dr/nlike/nrb00#n/cr17ic22_str.dat
adf27/dr/nlike/nrb00#n/cr17ic23-3e.dat
adf27/dr/nlike/nrb00#n/cr17ic23-3o.dat
adf27/dr/nlike/nrb00#n/cr17ic23-ne.dat
adf27/dr/nlike/nrb00#n/cr17ic23-no.dat
adf27/dr/nlike/nrb00#n/cr17ic23_str.dat
adf27/dr/nlike/nrb00#n/cu22ic22-2.dat
adf27/dr/nlike/nrb00#n/cu22ic22-n.dat
adf27/dr/nlike/nrb00#n/cu22ic22_str.dat
adf27/dr/nlike/nrb00#n/cu22ic23-3e.dat
adf27/dr/nlike/nrb00#n/cu22ic23-3o.dat
adf27/dr/nlike/nrb00#n/cu22ic23-ne.dat
adf27/dr/nlike/nrb00#n/cu22ic23-no.dat
adf27/dr/nlike/nrb00#n/cu22ic23_str.dat
adf27/dr/nlike/nrb00#n/f2ic22-2.dat
adf27/dr/nlike/nrb00#n/f2ic22-n.dat
adf27/dr/nlike/nrb00#n/f2ic22_str.dat
adf27/dr/nlike/nrb00#n/f2ic23-3e.dat
adf27/dr/nlike/nrb00#n/f2ic23-3o.dat
adf27/dr/nlike/nrb00#n/f2ic23-ne.dat
adf27/dr/nlike/nrb00#n/f2ic23-no.dat
adf27/dr/nlike/nrb00#n/f2ic23_str.dat
adf27/dr/nlike/nrb00#n/fe19ic22-2.dat
adf27/dr/nlike/nrb00#n/fe19ic22-n.dat
adf27/dr/nlike/nrb00#n/fe19ic22_str.dat
adf27/dr/nlike/nrb00#n/fe19ic23-3e.dat
adf27/dr/nlike/nrb00#n/fe19ic23-3o.dat
adf27/dr/nlike/nrb00#n/fe19ic23-ne.dat
adf27/dr/nlike/nrb00#n/fe19ic23-no.dat
adf27/dr/nlike/nrb00#n/fe19ic23_str.dat
adf27/dr/nlike/nrb00#n/k12ic22-2.dat
adf27/dr/nlike/nrb00#n/k12ic22-n.dat
adf27/dr/nlike/nrb00#n/k12ic22_str.dat
adf27/dr/nlike/nrb00#n/k12ic23-3e.dat
adf27/dr/nlike/nrb00#n/k12ic23-3o.dat
adf27/dr/nlike/nrb00#n/k12ic23-ne.dat
adf27/dr/nlike/nrb00#n/k12ic23-no.dat
adf27/dr/nlike/nrb00#n/k12ic23_str.dat
adf27/dr/nlike/nrb00#n/kr29icr22-2.dat
adf27/dr/nlike/nrb00#n/kr29icr22-n.dat
adf27/dr/nlike/nrb00#n/kr29icr22_str.dat
adf27/dr/nlike/nrb00#n/kr29icr23-3e.dat
adf27/dr/nlike/nrb00#n/kr29icr23-3o.dat
adf27/dr/nlike/nrb00#n/kr29icr23-ne.dat
adf27/dr/nlike/nrb00#n/kr29icr23-no.dat
adf27/dr/nlike/nrb00#n/kr29icr23_str.dat
adf27/dr/nlike/nrb00#n/mg5ic22-2.dat
adf27/dr/nlike/nrb00#n/mg5ic22-n.dat
adf27/dr/nlike/nrb00#n/mg5ic22_str.dat
adf27/dr/nlike/nrb00#n/mg5ic23-3e.dat

adf27/dr/nlike/nrb00#n/mg5ic23-3o.dat
adf27/dr/nlike/nrb00#n/mg5ic23-ne.dat
adf27/dr/nlike/nrb00#n/mg5ic23-no.dat
adf27/dr/nlike/nrb00#n/mg5ic23_str.dat
adf27/dr/nlike/nrb00#n/mn18ic22-2.dat
adf27/dr/nlike/nrb00#n/mn18ic22-n.dat
adf27/dr/nlike/nrb00#n/mn18ic22_str.dat
adf27/dr/nlike/nrb00#n/mn18ic23-3e.dat
adf27/dr/nlike/nrb00#n/mn18ic23-3o.dat
adf27/dr/nlike/nrb00#n/mn18ic23-ne.dat
adf27/dr/nlike/nrb00#n/mn18ic23-no.dat
adf27/dr/nlike/nrb00#n/mn18ic23_str.dat
adf27/dr/nlike/nrb00#n/mo35icr22-2.dat
adf27/dr/nlike/nrb00#n/mo35icr22-n.dat
adf27/dr/nlike/nrb00#n/mo35icr22_str.dat
adf27/dr/nlike/nrb00#n/mo35icr23-3e.dat
adf27/dr/nlike/nrb00#n/mo35icr23-3o.dat
adf27/dr/nlike/nrb00#n/mo35icr23-ne.dat
adf27/dr/nlike/nrb00#n/mo35icr23-no.dat
adf27/dr/nlike/nrb00#n/mo35icr23_str.dat
adf27/dr/nlike/nrb00#n/na4ic22-2.dat
adf27/dr/nlike/nrb00#n/na4ic22-n.dat
adf27/dr/nlike/nrb00#n/na4ic22_str.dat
adf27/dr/nlike/nrb00#n/na4ic23-3e.dat
adf27/dr/nlike/nrb00#n/na4ic23-3o.dat
adf27/dr/nlike/nrb00#n/na4ic23-ne.dat
adf27/dr/nlike/nrb00#n/na4ic23-no.dat
adf27/dr/nlike/nrb00#n/na4ic23_str.dat
adf27/dr/nlike/nrb00#n/ne3ic22-2.dat
adf27/dr/nlike/nrb00#n/ne3ic22-n.dat
adf27/dr/nlike/nrb00#n/ne3ic22_str.dat
adf27/dr/nlike/nrb00#n/ne3ic23-3e.dat
adf27/dr/nlike/nrb00#n/ne3ic23-3o.dat
adf27/dr/nlike/nrb00#n/ne3ic23-ne.dat
adf27/dr/nlike/nrb00#n/ne3ic23-no.dat
adf27/dr/nlike/nrb00#n/ne3ic23_str.dat
adf27/dr/nlike/nrb00#n/ni21ic22-2.dat
adf27/dr/nlike/nrb00#n/ni21ic22-n.dat
adf27/dr/nlike/nrb00#n/ni21ic22_str.dat
adf27/dr/nlike/nrb00#n/ni21ic23-3e.dat
adf27/dr/nlike/nrb00#n/ni21ic23-3o.dat
adf27/dr/nlike/nrb00#n/ni21ic23-ne.dat
adf27/dr/nlike/nrb00#n/ni21ic23-no.dat
adf27/dr/nlike/nrb00#n/ni21ic23_str.dat
adf27/dr/nlike/nrb00#n/o1ic2-2+3-n.dat
adf27/dr/nlike/nrb00#n/o1ic2-2+3_str.dat
adf27/dr/nlike/nrb00#n/p8ic22-2.dat
adf27/dr/nlike/nrb00#n/p8ic22-n.dat
adf27/dr/nlike/nrb00#n/p8ic22_str.dat
adf27/dr/nlike/nrb00#n/p8ic23-3e.dat
adf27/dr/nlike/nrb00#n/p8ic23-3o.dat
adf27/dr/nlike/nrb00#n/p8ic23-ne.dat
adf27/dr/nlike/nrb00#n/p8ic23-no.dat
adf27/dr/nlike/nrb00#n/p8ic23_str.dat
adf27/dr/nlike/nrb00#n/s9ic22-2.dat
adf27/dr/nlike/nrb00#n/s9ic22-n.dat
adf27/dr/nlike/nrb00#n/s9ic22_str.dat
adf27/dr/nlike/nrb00#n/s9ic23-3e.dat
adf27/dr/nlike/nrb00#n/s9ic23-3o.dat

adf27/dr/nlike/nrb00#n/s9ic23-ne.dat
adf27/dr/nlike/nrb00#n/s9ic23-no.dat
adf27/dr/nlike/nrb00#n/s9ic23_str.dat
adf27/dr/nlike/nrb00#n/sc14ic22-2.dat
adf27/dr/nlike/nrb00#n/sc14ic22-n.dat
adf27/dr/nlike/nrb00#n/sc14ic22_str.dat
adf27/dr/nlike/nrb00#n/sc14ic23-3e.dat
adf27/dr/nlike/nrb00#n/sc14ic23-3o.dat
adf27/dr/nlike/nrb00#n/sc14ic23-ne.dat
adf27/dr/nlike/nrb00#n/sc14ic23-no.dat
adf27/dr/nlike/nrb00#n/sc14ic23_str.dat
adf27/dr/nlike/nrb00#n/si7ic22-2.dat
adf27/dr/nlike/nrb00#n/si7ic22-n.dat
adf27/dr/nlike/nrb00#n/si7ic22_str.dat
adf27/dr/nlike/nrb00#n/si7ic23-3e.dat
adf27/dr/nlike/nrb00#n/si7ic23-3o.dat
adf27/dr/nlike/nrb00#n/si7ic23-ne.dat
adf27/dr/nlike/nrb00#n/si7ic23-no.dat
adf27/dr/nlike/nrb00#n/si7ic23_str.dat
adf27/dr/nlike/nrb00#n/ti15ic22-2.dat
adf27/dr/nlike/nrb00#n/ti15ic22-n.dat
adf27/dr/nlike/nrb00#n/ti15ic22_str.dat
adf27/dr/nlike/nrb00#n/ti15ic23-3e.dat
adf27/dr/nlike/nrb00#n/ti15ic23-3o.dat
adf27/dr/nlike/nrb00#n/ti15ic23-ne.dat
adf27/dr/nlike/nrb00#n/ti15ic23-no.dat
adf27/dr/nlike/nrb00#n/ti15ic23_str.dat
adf27/dr/nlike/nrb00#n/v16ic22-2.dat
adf27/dr/nlike/nrb00#n/v16ic22-n.dat
adf27/dr/nlike/nrb00#n/v16ic22_str.dat
adf27/dr/nlike/nrb00#n/v16ic23-3e.dat
adf27/dr/nlike/nrb00#n/v16ic23-3o.dat
adf27/dr/nlike/nrb00#n/v16ic23-ne.dat
adf27/dr/nlike/nrb00#n/v16ic23-no.dat
adf27/dr/nlike/nrb00#n/v16ic23_str.dat
adf27/dr/nlike/nrb00#n/xe47icr22-2.dat
adf27/dr/nlike/nrb00#n/xe47icr22-n.dat
adf27/dr/nlike/nrb00#n/xe47icr22_str.dat
adf27/dr/nlike/nrb00#n/xe47icr23-3e.dat
adf27/dr/nlike/nrb00#n/xe47icr23-3o.dat
adf27/dr/nlike/nrb00#n/xe47icr23-ne.dat
adf27/dr/nlike/nrb00#n/xe47icr23-no.dat
adf27/dr/nlike/nrb00#n/xe47icr23_str.dat
adf27/dr/nlike/nrb00#n/zn23ic22-2.dat
adf27/dr/nlike/nrb00#n/zn23ic22-n.dat
adf27/dr/nlike/nrb00#n/zn23ic22_str.dat
adf27/dr/nlike/nrb00#n/zn23ic23-3e.dat
adf27/dr/nlike/nrb00#n/zn23ic23-3o.dat
adf27/dr/nlike/nrb00#n/zn23ic23-ne.dat
adf27/dr/nlike/nrb00#n/zn23ic23-no.dat
adf27/dr/nlike/nrb00#n/zn23ic23_str.dat
adf27/dr/nlike/nrb00#n/zn23icr22-2.dat
adf27/dr/nlike/nrb00#n/zn23icr22-n.dat
adf27/dr/nlike/nrb00#n/zn23icr22_str.dat
adf27/dr/nlike/nrb00#n/zn23icr23-3e.dat
adf27/dr/nlike/nrb00#n/zn23icr23-3o.dat
adf27/dr/nlike/nrb00#n/zn23icr23-ne.dat
adf27/dr/nlike/nrb00#n/zn23icr23-no.dat
adf27/dr/nlike/nrb00#n/zn23icr23_str.dat

corresponding to new N-like *nrb00 adf09* files.

D.25 Added files:

adf28/dr/nlike/nrb00#n/al6ic22.dat
adf28/dr/nlike/nrb00#n/al6ic23.dat
adf28/dr/nlike/nrb00#n/al6ls22.dat
adf28/dr/nlike/nrb00#n/al6ls23.dat
adf28/dr/nlike/nrb00#n/ar11ic22.dat
adf28/dr/nlike/nrb00#n/ar11ic23.dat
adf28/dr/nlike/nrb00#n/ar11ls22.dat
adf28/dr/nlike/nrb00#n/ar11ls23.dat
adf28/dr/nlike/nrb00#n/ca13ic22.dat
adf28/dr/nlike/nrb00#n/ca13ic23.dat
adf28/dr/nlike/nrb00#n/ca13ls22.dat
adf28/dr/nlike/nrb00#n/ca13ls23.dat
adf28/dr/nlike/nrb00#n/cl10ic22.dat
adf28/dr/nlike/nrb00#n/cl10ic23.dat
adf28/dr/nlike/nrb00#n/cl10ls22.dat
adf28/dr/nlike/nrb00#n/cl10ls23.dat
adf28/dr/nlike/nrb00#n/co20ic22.dat
adf28/dr/nlike/nrb00#n/co20ic23.dat
adf28/dr/nlike/nrb00#n/co20ls22.dat
adf28/dr/nlike/nrb00#n/co20ls23.dat
adf28/dr/nlike/nrb00#n/cr17ic22.dat
adf28/dr/nlike/nrb00#n/cr17ic23.dat
adf28/dr/nlike/nrb00#n/cr17ls22.dat
adf28/dr/nlike/nrb00#n/cr17ls23.dat
adf28/dr/nlike/nrb00#n/cu22ic22.dat
adf28/dr/nlike/nrb00#n/cu22ic23.dat
adf28/dr/nlike/nrb00#n/cu22ls22.dat
adf28/dr/nlike/nrb00#n/cu22ls23.dat
adf28/dr/nlike/nrb00#n/f2ic22.dat
adf28/dr/nlike/nrb00#n/f2ic23.dat
adf28/dr/nlike/nrb00#n/f2ls22.dat
adf28/dr/nlike/nrb00#n/f2ls23.dat
adf28/dr/nlike/nrb00#n/fe19ic22.dat
adf28/dr/nlike/nrb00#n/fe19ic23.dat
adf28/dr/nlike/nrb00#n/fe19ls22.dat
adf28/dr/nlike/nrb00#n/fe19ls23.dat
adf28/dr/nlike/nrb00#n/k12ic22.dat
adf28/dr/nlike/nrb00#n/k12ic23.dat
adf28/dr/nlike/nrb00#n/k12ls22.dat
adf28/dr/nlike/nrb00#n/k12ls23.dat
adf28/dr/nlike/nrb00#n/kr29icr22.dat
adf28/dr/nlike/nrb00#n/kr29icr23.dat
adf28/dr/nlike/nrb00#n/mg5ic22.dat
adf28/dr/nlike/nrb00#n/mg5ic23.dat
adf28/dr/nlike/nrb00#n/mg5ls22.dat
adf28/dr/nlike/nrb00#n/mg5ls23.dat
adf28/dr/nlike/nrb00#n/mn18ic22.dat
adf28/dr/nlike/nrb00#n/mn18ic23.dat
adf28/dr/nlike/nrb00#n/mn18ls22.dat
adf28/dr/nlike/nrb00#n/mn18ls23.dat
adf28/dr/nlike/nrb00#n/mo35icr22.dat
adf28/dr/nlike/nrb00#n/mo35icr23.dat
adf28/dr/nlike/nrb00#n/na4ic22.dat
adf28/dr/nlike/nrb00#n/na4ic23.dat
adf28/dr/nlike/nrb00#n/na4ls22.dat

adf28/dr/nlike/nrb00#n/na4ls23.dat
adf28/dr/nlike/nrb00#n/ne3ic22.dat
adf28/dr/nlike/nrb00#n/ne3ic23.dat
adf28/dr/nlike/nrb00#n/ne3ls22.dat
adf28/dr/nlike/nrb00#n/ne3ls23.dat
adf28/dr/nlike/nrb00#n/ni21ic22.dat
adf28/dr/nlike/nrb00#n/ni21ic23.dat
adf28/dr/nlike/nrb00#n/ni21ls22.dat
adf28/dr/nlike/nrb00#n/ni21ls23.dat
adf28/dr/nlike/nrb00#n/o1ic22.dat
adf28/dr/nlike/nrb00#n/o1ic23.dat
adf28/dr/nlike/nrb00#n/o1ls22.dat
adf28/dr/nlike/nrb00#n/o1ls23.dat
adf28/dr/nlike/nrb00#n/p8ic22.dat
adf28/dr/nlike/nrb00#n/p8ic23.dat
adf28/dr/nlike/nrb00#n/p8ls22.dat
adf28/dr/nlike/nrb00#n/p8ls23.dat
adf28/dr/nlike/nrb00#n/s9ic22.dat
adf28/dr/nlike/nrb00#n/s9ic23.dat
adf28/dr/nlike/nrb00#n/s9ls22.dat
adf28/dr/nlike/nrb00#n/s9ls23.dat
adf28/dr/nlike/nrb00#n/sc14ic22.dat
adf28/dr/nlike/nrb00#n/sc14ic23.dat
adf28/dr/nlike/nrb00#n/sc14ls22.dat
adf28/dr/nlike/nrb00#n/sc14ls23.dat
adf28/dr/nlike/nrb00#n/si7ic22.dat
adf28/dr/nlike/nrb00#n/si7ic23.dat
adf28/dr/nlike/nrb00#n/si7ls22.dat
adf28/dr/nlike/nrb00#n/si7ls23.dat
adf28/dr/nlike/nrb00#n/ti15ic22.dat
adf28/dr/nlike/nrb00#n/ti15ic23.dat
adf28/dr/nlike/nrb00#n/ti15ls22.dat
adf28/dr/nlike/nrb00#n/ti15ls23.dat
adf28/dr/nlike/nrb00#n/v16ic22.dat
adf28/dr/nlike/nrb00#n/v16ic23.dat
adf28/dr/nlike/nrb00#n/v16ls22.dat
adf28/dr/nlike/nrb00#n/v16ls23.dat
adf28/dr/nlike/nrb00#n/xe47icr22.dat
adf28/dr/nlike/nrb00#n/xe47icr23.dat
adf28/dr/nlike/nrb00#n/zn23ic23.dat
adf28/dr/nlike/nrb00#n/zn23icr22.dat
adf28/dr/nlike/nrb00#n/zn23icr23.dat
adf28/dr/nlike/nrb00#n/zn23ls23.dat

corresponding to new N-like nrb00 adf09 files.

D.26 Replaced *adf09/nrbjc00#li/jc00#li_xe51icr23.dat* with a new file. The old file contained 2-2 data despite the filename. Note also that the replacement file was badly formatted so had to be edited by hand as all of the *jc00* files were in 2002.

D.27 DR calculalations for O-like Mg, Cl, Ca and Sc had used observed energies in eV in the original calculations but the processsing codes treat energies as being in Rydbergs by default. The appropriate keyword was set and the calculations re-ran, the old data have been removed. Specifically, removed:

adf28/dr/olike/oiz00#o/ca12ic22.dat
adf28/dr/olike/oiz00#o/cl9ic22.dat
adf28/dr/olike/oiz00#o/mg4ic22.dat
adf28/dr/olike/oiz00#o/sc13ic22.dat

added:

adf28/dr/olike/nrb00#o/ca12ic22.dat
adf28/dr/olike/nrb00#o/cl9ic22.dat
adf28/dr/olike/nrb00#o/mg4ic22.dat
adf28/dr/olike/nrb00#o/sc13ic22.dat

removed:

adf09/nrboiz00#o/oiz00#o_ca12ic22.dat
adf09/nrboiz00#o/oiz00#o_cl9ic22.dat
adf09/nrboiz00#o/oiz00#o_mg4ic22.dat
adf09/nrboiz00#o/oiz00#o_sc13ic22.dat

added:

adf09/nrboiz00#o/nrb00#o_ca12ic22.dat
adf09/nrboiz00#o/nrb00#o_cl9ic22.dat
adf09/nrboiz00#o/nrb00#o_mg4ic22.dat
adf09/nrboiz00#o/nrb00#o_sc13ic22.dat

D.28 Incorrect donor labels were introduced in some *adf12* datasets in the last release. The H(n=2) and He(2 1S) and He(2 3S) were both identified as 1S. The data is correct. Datasets in *adf12/qef97#h* and *adf12/qef97#he* were affected.

Finally, I look forward to seeing as many of you as possible at the ADAS Workshop at Cosener's House in Abingdon on 12-14 November.

HPS
04 Sept. 2006