

Squirrel and Pika Tips

2019 Users Meeting

Lund, Sweden

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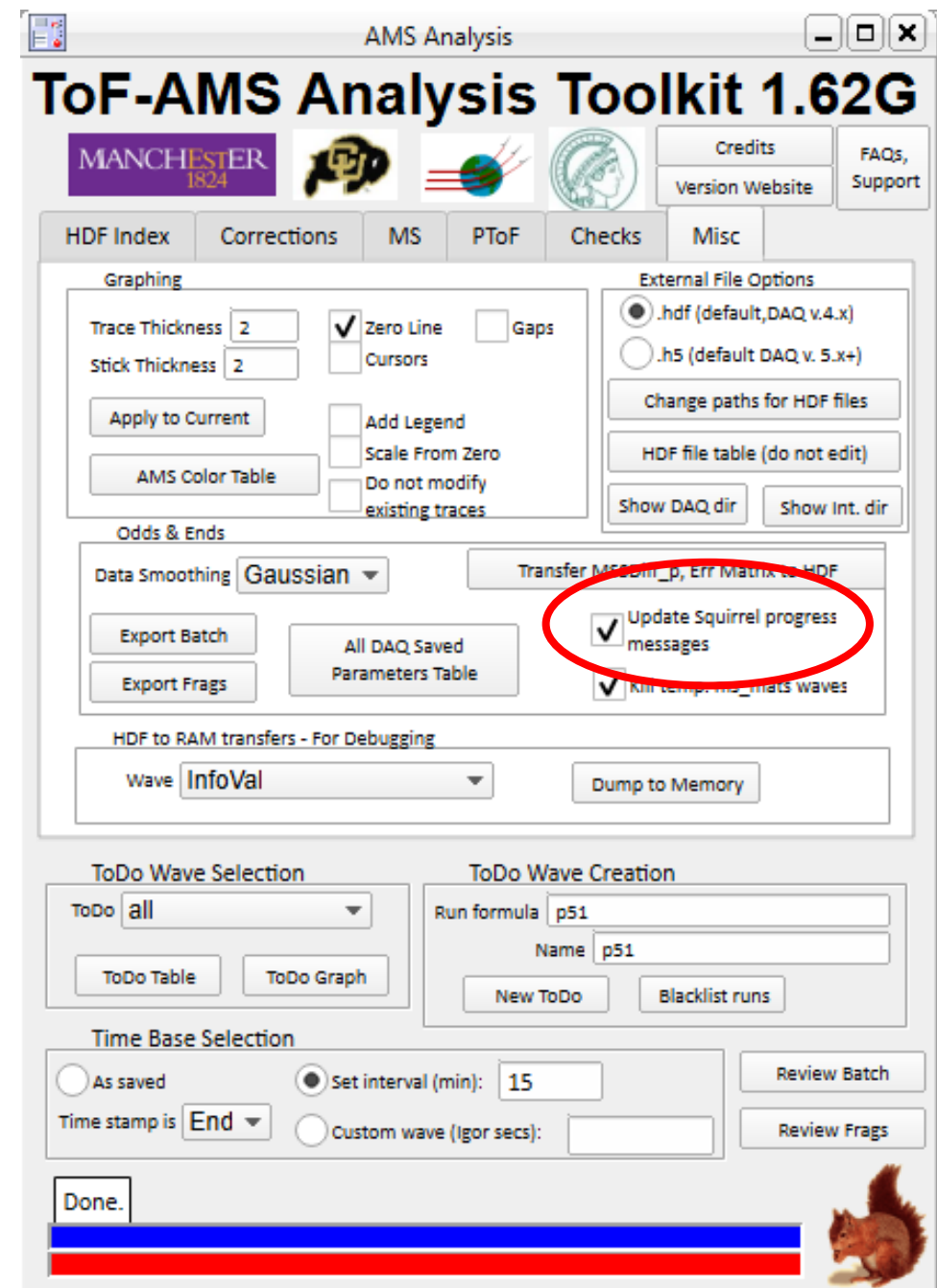
How can I make Squirrel or Pika go faster?

Updating the progress bars in Squirrel takes ~ 30% of the processing/calculating time!

You can temporarily disable the process bars by using the checkbox in the Squirrel panel – Miscellaneous tab.

When unchecked, the progress bars DO NOT UPDATE. To know when calculations are finished:

- For major operations like preprocessing, wait for comments in the history bar to indicate when the operation is completed.
- For other operations such as average mass spectra of large todo waves, you can always check if the 'Abort' button in the lower corner of the Igor experiment is available.



How can I keep track of all the files that are attached to an experiment?

By default external files in Squirrel/Pika will be named AMS_intermediate_xxxxxx.hdf

You can assign more intuitive names to files, names that match your experiment name by using the checkbox 'Use chosen interm. file, experim. prefix'.

When pre-processing begins, the user will be prompted for the name so replace the "AMS_intermediate". This will be name of the files (followed by a 6 digit number); this will also be the name given to the experiment.

This option is only available once per experiment. This checkbox is replaced with text showing the user-supplied name once this option is activated.

AMS Analysis

ToF-AMS Analysis Toolkit 1.62G

MANCHESTER 1824

Credits
Version Website
FAQs, Support

HDF Index Corrections MS PToF Checks Misc

HDF File Index

Get Index ☐ New only ☒ No BFSP Interval (0=auto) 0
☒ Plot Diagnostics ☐ No fast mode Units Minutes

Import Check index Run Table Diagnostics Plot Update Diagnostics

Checks for UMR Stick Recalculations/Adjustments

M/z calibration Baseline, UMR Single Ion DC markers & ePToF Tool Fast MS

Pre-Process Data (finalize UMR sticks & raw spectra for HR)

☒ Save experiment after pre-process MS (s) PToF (s) ePToF
☐ On-pre-proc. only ☒ Stick MS
☐ User chosen interm. file, experim. prefix ☐ Raw MS
☒ MS m/z duty cycle
Pre-Process ☐ MS stick recalc ☒ Use m/z fit params ☒ Subtract baseline

ToDo Wave Selection

ToDo all

ToDo Table ToDo Graph

ToDo Wave Creation

Run formula
Name
New ToDo Blacklist runs

Time Base Selection

☒ As saved ☐ Set interval (min): 0 ☐ Custom wave (Igor secs):
Time stamp is End

Ready


Review Batch
Review Frags

How do I upgrade Squirrel and Pika?

You can update your Squirrel and Pika experiments to the latest version of the code and not have to redo any calculations.


Users can download the stand-alone ipf and load into any experiment. Within the experiment, from the top-most menu select 'AMSIPFManage, select Update AMS ipfs and ADOPT ipfs'.

The code will prompt for the folder containing the ipfs and will automatically kill old ipfs, load the new ipfs and kill and recreate the main Squirrel and/or Pika panels.



ToF-AMS

software downloads

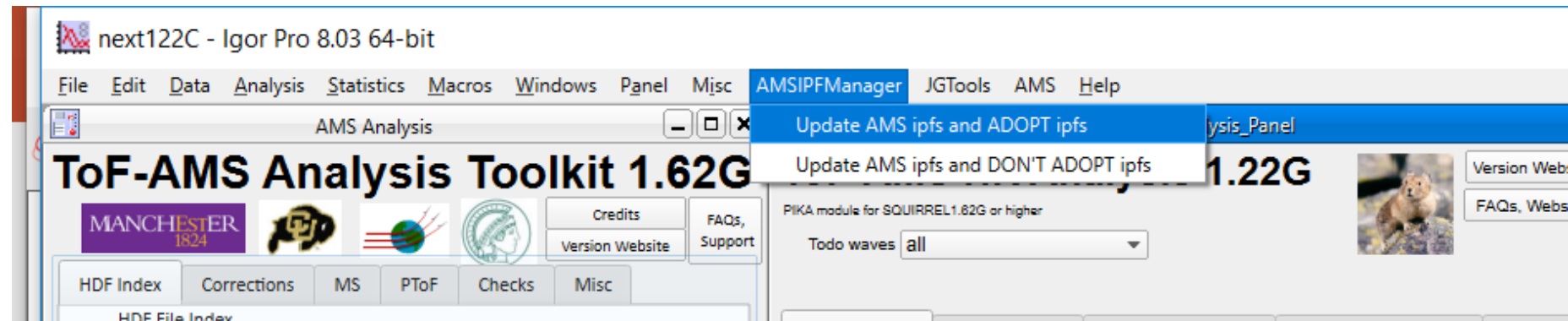


[Upgrade](#) [SQUIRREL](#) [PIKA](#) [APES](#) [SPARROW](#) [IE Calibration](#)

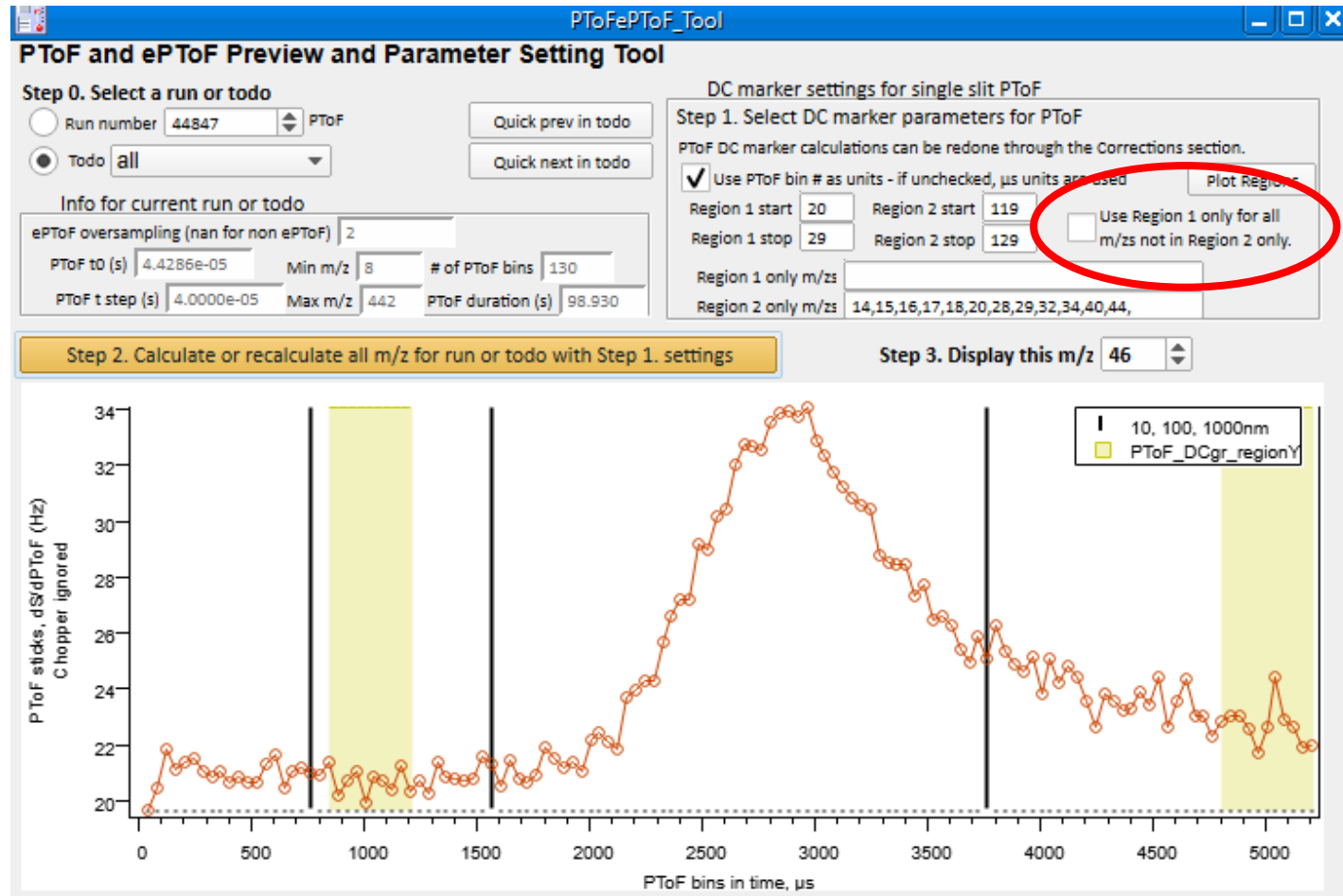
- [DAQ web site](#)
- [Squirrel and PIKA Information Web Site](#)
- [AMS Analysis Web Site](#)
- All Igor 6.x users are must upgrade to at least [Igor 6.37](#). There is a [known issue with MacOS High Sierra and Igor notebooks for Igor versions < 7.07](#). For Igor 6.37 and High Sierra users, one must kill all notebooks, which include the readme files, before saving an experiment.
- All the latest code as of June, 8 2018 has been tested on Igor 7.07 and Igor 8.02 and is compatible.
- All Igor 7.x users are strongly encouraged to upgrade to at least [Igor 7.07](#)

Upgrade Existing SQUIRREL, PIKA Experiments

| Version | Date | Release Notes | File Type | File Type |
|---------|------------|-------------------------------------|--|---|
| v1.04 | 5-Dec-2018 | Release Notes v1.04 | 1.04 Igor Update ipfs (single ipf that compiles independently) | Updated Procedures, ReadMe files (zipped ipf & readme file) |



How can I make my PToF data better?



Many users do not acquire PToF data far enough within a chopper rotation.

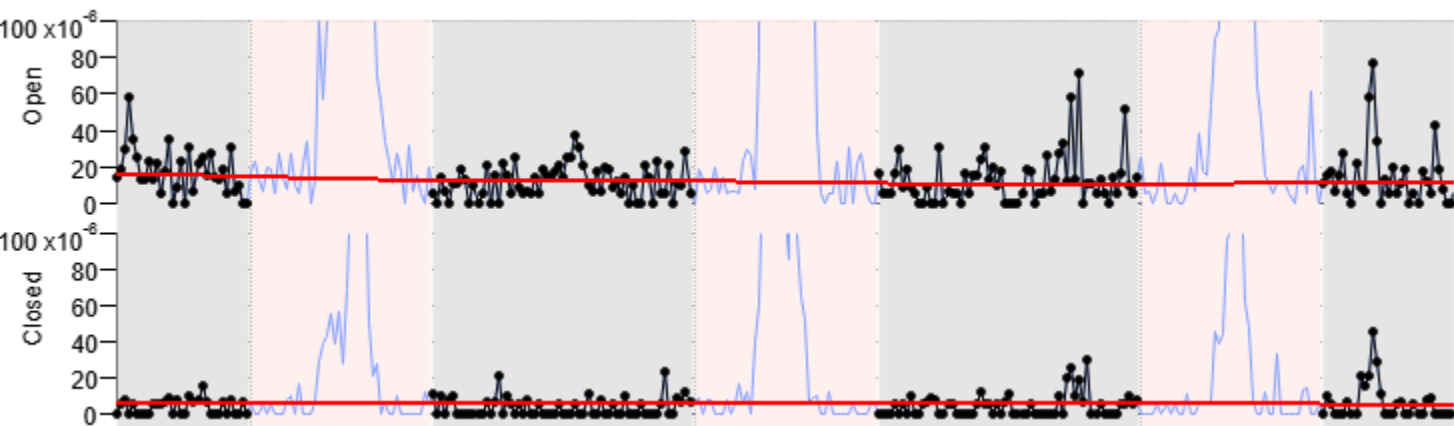
For the DC subtraction to work nicely it is a good idea to to out until at least 6500 μ s.

For data already acquired you may want to use the checkbox 'Use Region 1 only for all mzs not in Region 2 only'.

For ADQ cards it may be better to create a menu with only PToF (or ePToF) data that you can alternate between rather than within of a gen-alt menu.

How can I make my HR data less noisy?

Tofwerk's baseline algorithm

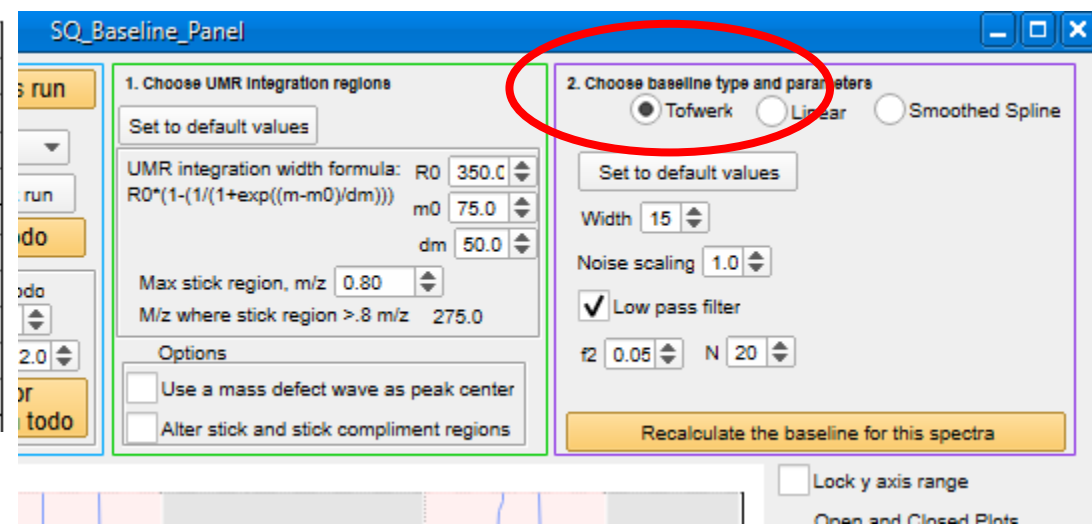
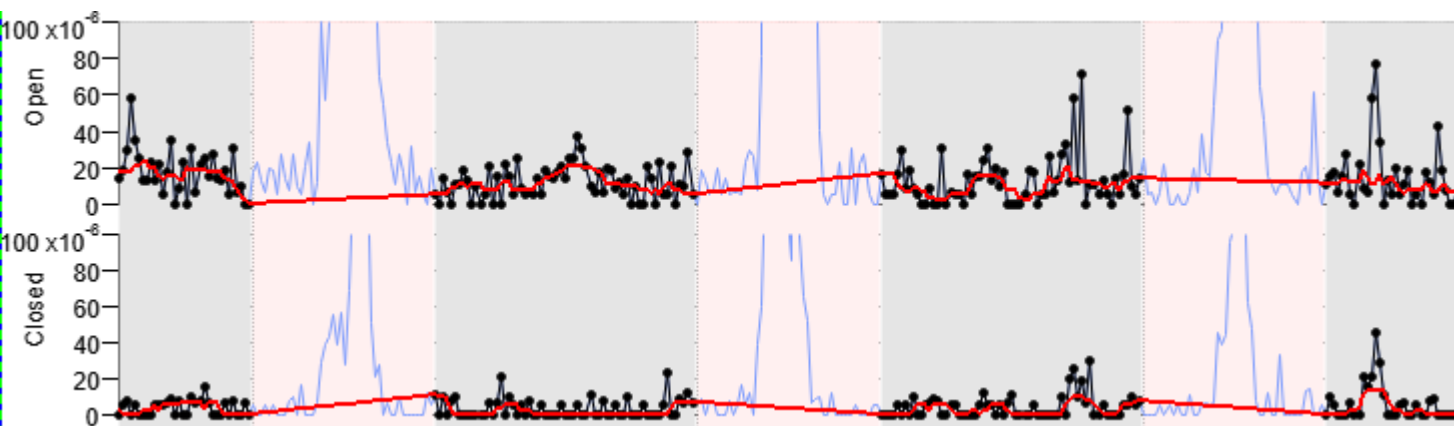


Tofwerk's algorithm for calculating spectral baselines was incorporated in Squirrel 1.62, but not as the default option.

After trying it out on many data sets, it works very well.

The improvement is very small but worthwhile, especially for smaller signals.

Squirrel's linear baseline algorithm



Is there an easier way to generate todo waves?

Using different menus:

The following waves may be useful for generating todos based on specific user settings
root:diagnostics:DAQSamplingType (not a one-to-one translation of user menus but is similar)
root:diagnostics:toftype (will contain different numbers for V/W modes & different ionization types)
root:diagnostics:analogInxx (analog in values – depends on which signals users connected)

As an example:

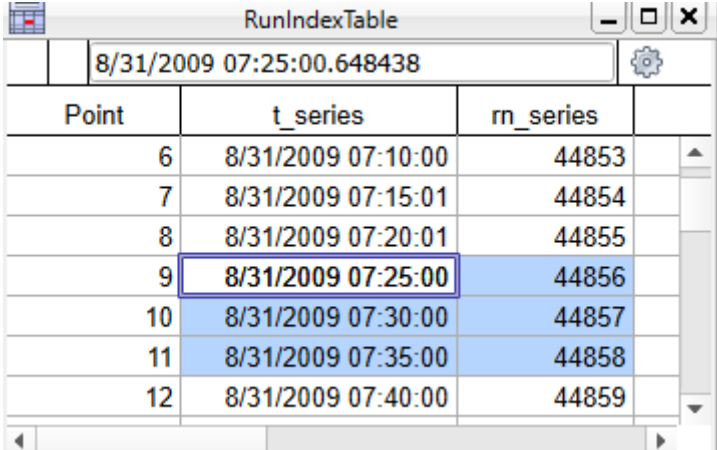
Make/o/n=(numpts(root:diagnostics:toftype)) root:TodoFlagWave = root:diagnostics:toftype==1 &&

root:diagnostics:DAQSamplingType == 3

Then enter TodoFlagWave instead of run numbers

Using point numbers instead of run numbers:

From the run table, one can simply enter p# instead of the run numbers
In this example one could use 'p9 – p11' instead of '44856 – 44858'



| Point | t_series | rn_series |
|-------|--------------------|-----------|
| 6 | 8/31/2009 07:10:00 | 44853 |
| 7 | 8/31/2009 07:15:01 | 44854 |
| 8 | 8/31/2009 07:20:01 | 44855 |
| 9 | 8/31/2009 07:25:00 | 44856 |
| 10 | 8/31/2009 07:30:00 | 44857 |
| 11 | 8/31/2009 07:35:00 | 44858 |
| 12 | 8/31/2009 07:40:00 | 44859 |

Where can I get more help?

Email cacc-support@aerodyne.com

Using this email will ensure someone will respond to your question soon.
It is helpful if you indicate the version of Igor and Squirrel/Pika you are using,
and if possible, when one might connect via teamviewer.

Search the wiki for phrases or topics of concern

http://cires1.colorado.edu/jimenez-group/wiki/index.php/ToF-AMS_Analysis_Software

I still regularly update/edit/add content to this wiki as the code evolves.

What is new in Squirrel/Pika 1.63/1.23?

- Nice functions for making Squirrel and Pika (and other) panels larger or smaller
- New ability to perform HR fits on multiple data sets (MS and PToF)
- More multiprocessor functionality to speed things up
- Renovation of main Pika panel, removal many options that are no longer useful
- New ability to perform diurnal averages for any user-supplied data wave.
- Incorporation of optional calculations of Corbin et al, AMT 2015 errors generated from Monte Carlo simulations using m/z calibrations
- New default of 'Tofware' style of baseline calculation - 'Linear' and 'Smoothed Spline' options will be retired
- Igor 6 compatibility remains - but it may be the last version to be so!
- Released some time in September 2019