Issues and highlights with the new L-ToF-AMS

AMS USERS’ MEETING 2016

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L-ToF-AMS: ”Combining W-mode resolution and V-mode sensitivity”

• ”Who needs an L-ToF-AMS?”
• The higher resolution and sensitivity could provide more detailed information about aerosol chemical composition (organic nitrogen and other?).

Photo: Olga Garmash

Photo: Liine Heikkinen
ePToF issues…

→ no ePToF-data so far…

- All this because of broken or almost broken wires?

Chopper positions being randomly skipped + ePToF AB often negative + PToF timeout messages

Testing chopper unit no. 3 next
Chopper positions being skipped

Menu Design:
Closed 5s
Open 5s
$ePTof \times 3$

Positive AB
C O C O C ePTof

Negative AB
C O C O C O ePTof

Time spent in Open = Time spent in Closed

Time spent in Open < Time spent in Closed
ePToF unit no. 2 before its wires broke – good?
Peak shape issues, higher \(m/z\)'s seem OK

UHEL AMS (chamber) raw ms

Aerodyne AMS (02/2016, ambient) raw ms
Peak width issues

Why do small ions behave like this?

Is this related to the prev. slide?

Could this be tuned out? Or is it ”an L-ToF feature”?

Pika: freedom to modify the curve parameters more
Three campaigns

- **Spring campaign**: March – May 2016
  - Relatively high N-peaks observed in Hyytiälä during early spring: trying to catch them with the L-ToF
  - Hyytiälä, SMEAR II

- **COALA 1**: June- July 2016
  - Role of NO\textsubscript{x} and aerosol seed acidity in SOA formation from α-pinene ozonolysis
  - 2 m\textsuperscript{3} Teflon reaction chamber

- **IBAIRN**: September 2016
  - Together with MPI measuring reactive nitrogen in all of its forms
  - Hyytiälä, SMEAR II
Spring campaign (ambient) PIKA fits

Adding $\text{C}_3\text{H}_6\text{NO}_2^+$ makes the fit better
COALA 1 (chamber: $[\text{NO}_x] = 10 \text{ ppb}_v$)  
PIKA fits
Thank you for your attention!