

Linux WaveCatcher interface at IPN and its future développements

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Outline



- Motivations
- What has been done
 - Linux Wavecatcher Architecture
 - Man-machine interface
 - VIGRU
- What has to be done
 - Implement CVISU in the acquisition system
 - connect a CCD camera and the Wavecatcher in the acquisition system
- Outlook

Motivations



- The IPNO is a leader laboratory for the developpement of silicon detectors devoted to ion detection.

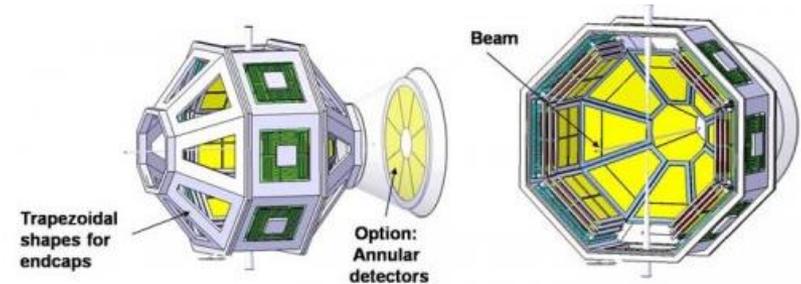
AGAT

Study in inverse kinematics of the collision between hydrocarbon molecules and atoms by means of the AGAT silicon multidetector



GASPARD

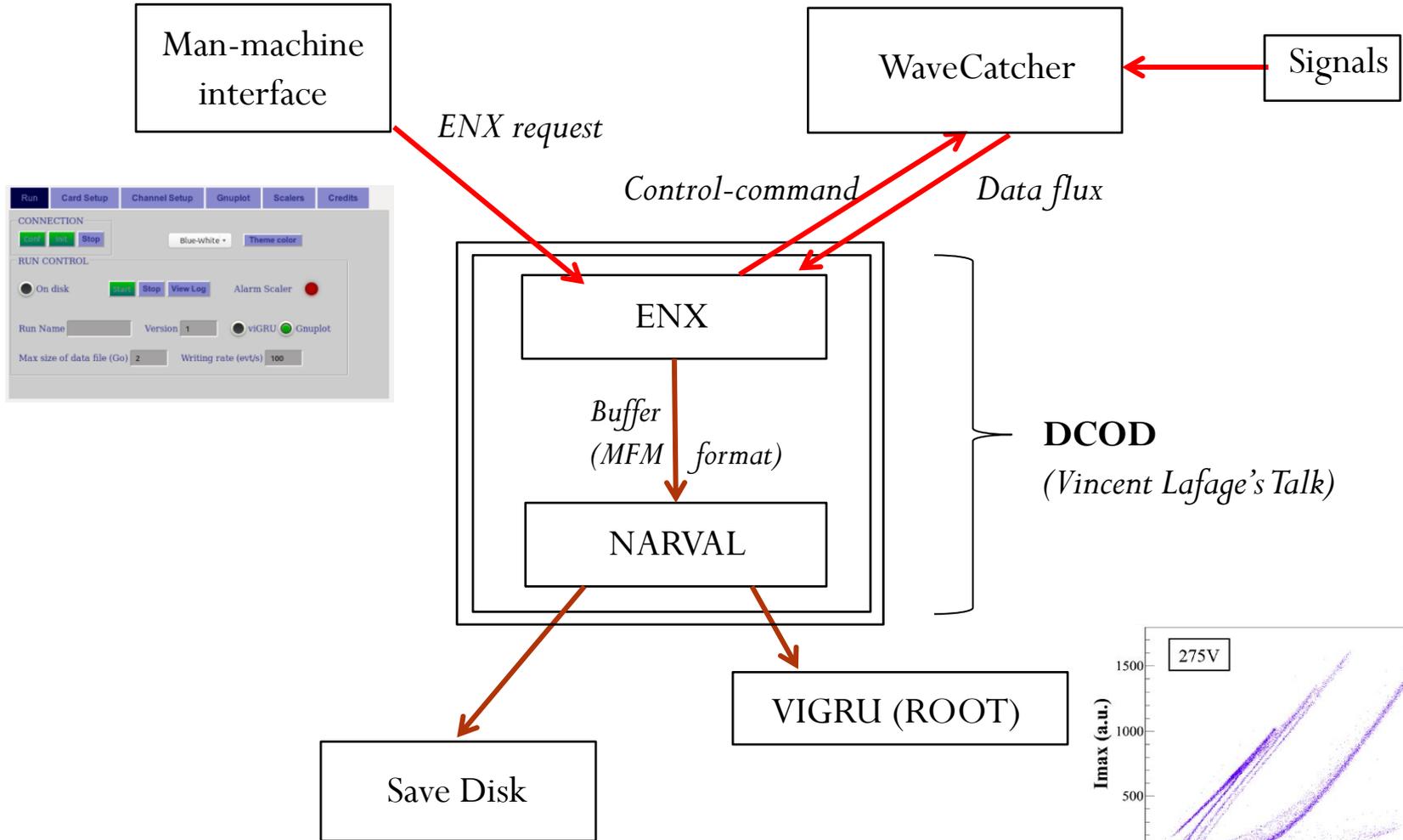
Study of structure by direct reaction.
Main approach : use of the current signal shape to identify particles.



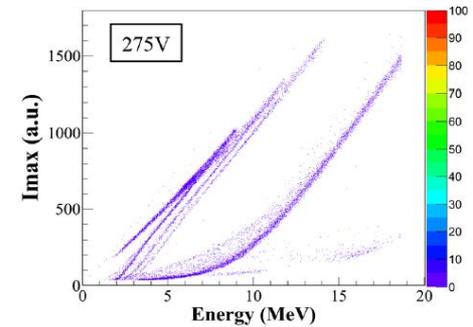
GASPARD detector (Laura GRASSI's talk)

For the purpose of putting together testing means for the AGAT and GASPARD experiment,
The IPN and the CSNSM have created a **LINUX interface for the WAVECATCHER.**

What has been done



DCOD
(Vincent Lafage's Talk)



Man-machine interface



Launch of the acquisition

Card setup

Channel setup

Gnuplot display

VIGRU (GANIL software)



- **VIGRU** :

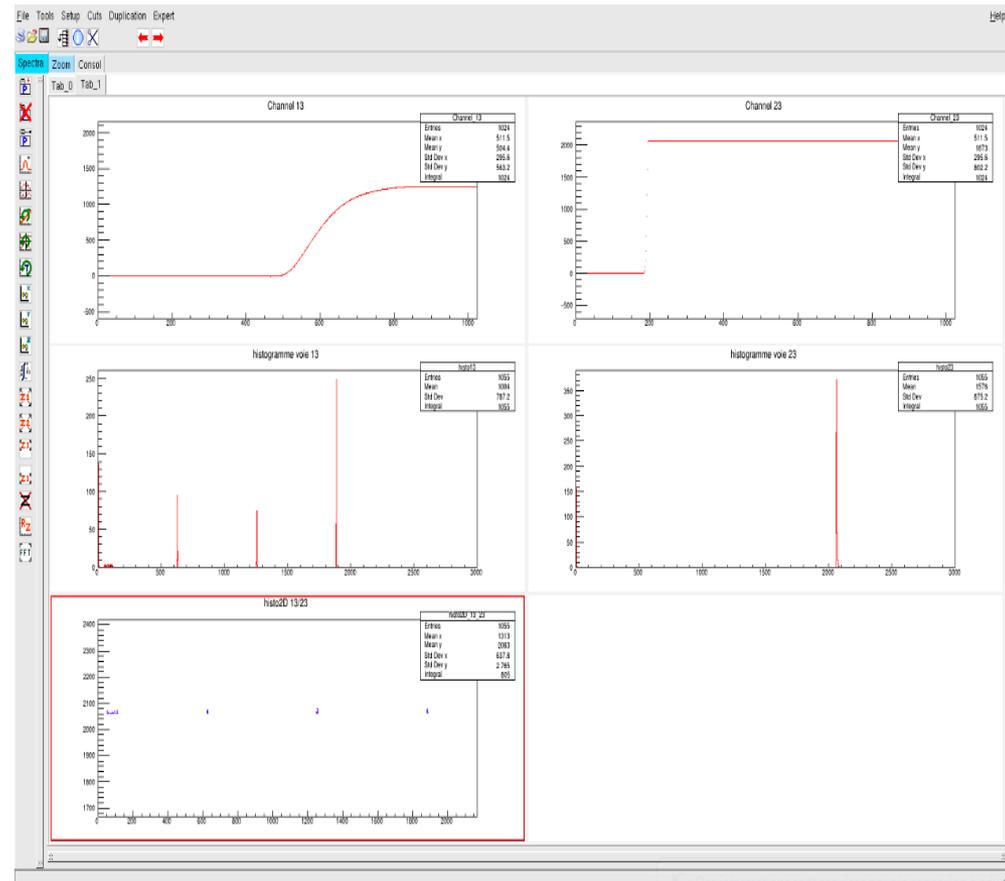
- software to visualize a large number of histogramms produced by remote servers.
- vigru uses **ROOT** tools.

- The signal processing is done in **Narval Server** which communicates with **VIGRU** :

- Signal processing and histogram display in C++.

Eg : Filtering (CR-RC2, moving average, ...)

- Goal : monitoring the experiment
With home made analysing tools in real time.



Vigru visualisation on detector test experiment

Data format



- The datas are saved under the GANIL MultiFrame metaformat (MFM).

WaveCatcher event	Type	byte 1	byte 2	byte 3	byte 4	byte 5	byte 6	byte 7	byte 8	byte 9	byte 10	byte 11	byte 12	byte 13	byte 14	byte 15	byte 16
1 *	MFM Header 16 bytes	metaType	frameSize			dataSource	frameType (0x50 or 0x51 or 0x52)		revision	headerSize	itemSize		nItems				
1 *	Event Header 32 bytes	EventID				SamplingFreq (since 26 fev 2016)				TDC							
		Unix_Time								NbOfSAMBlocksInEvent				ControllerBoardSerialNumber (since 12 fev 2016)			
nItems *	Channel Header 64 bytes	ChannelType				Channel				TrigCount				TimeCount			
		WaveformDataSize				NotUsed_4				NotUsed_5							
		Baseline				Peak				PeakCell				Charge			
		CFDRisingEdgeTime				CFDFallingEdgeTime				FCR				NotUsed_6			
	first point				second point				third point				fourth point				
	fifth point							
				
...								

MFM format goals :

- To define binary format for data acquisition.

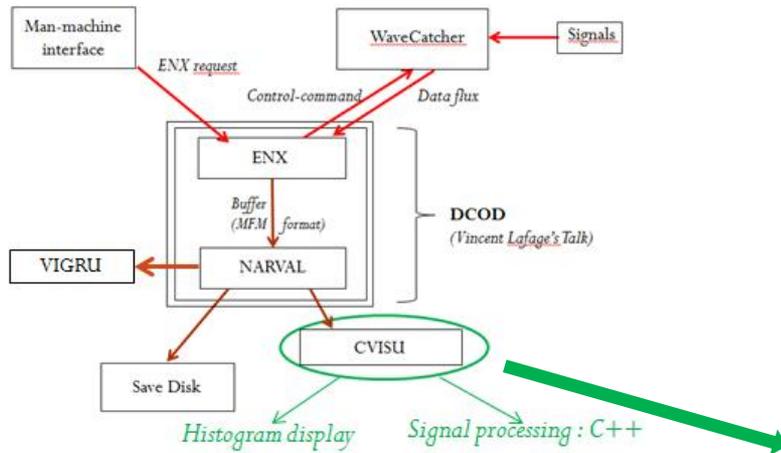
- Self contained serialization

- Adapted to network transfer

Structure of the MFM format

What has to be done

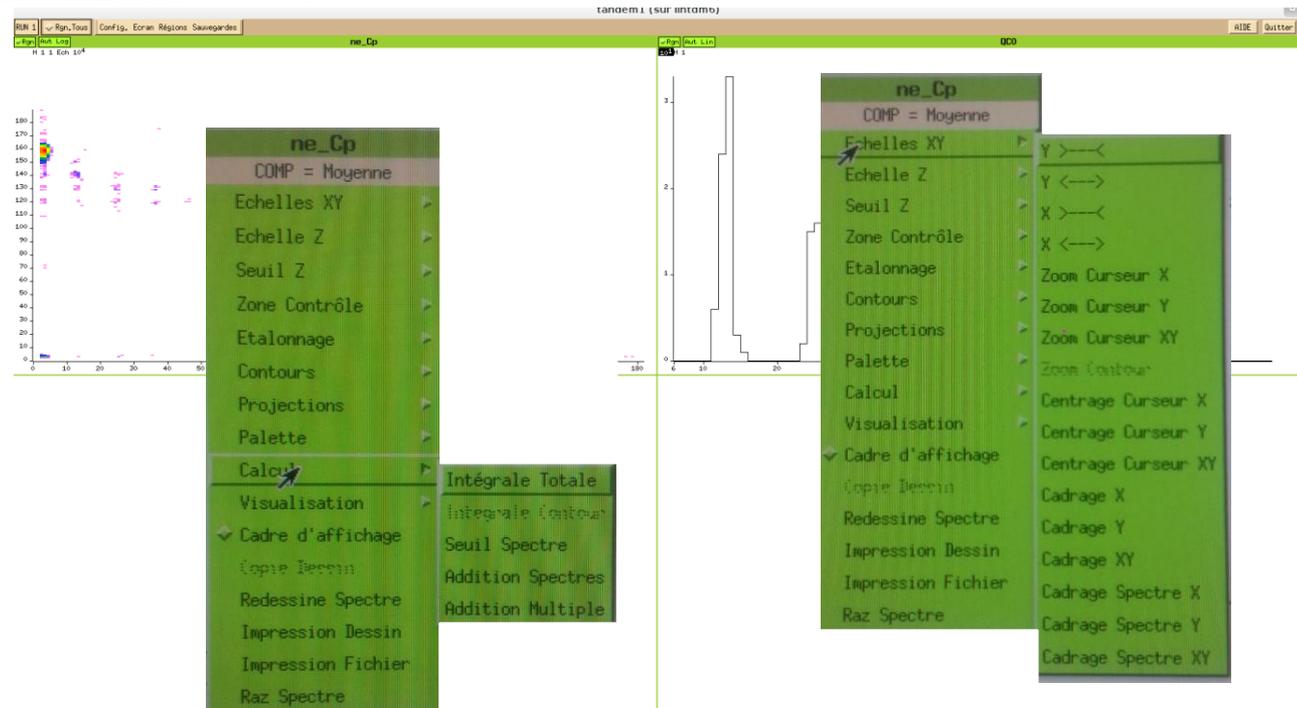
CVISU



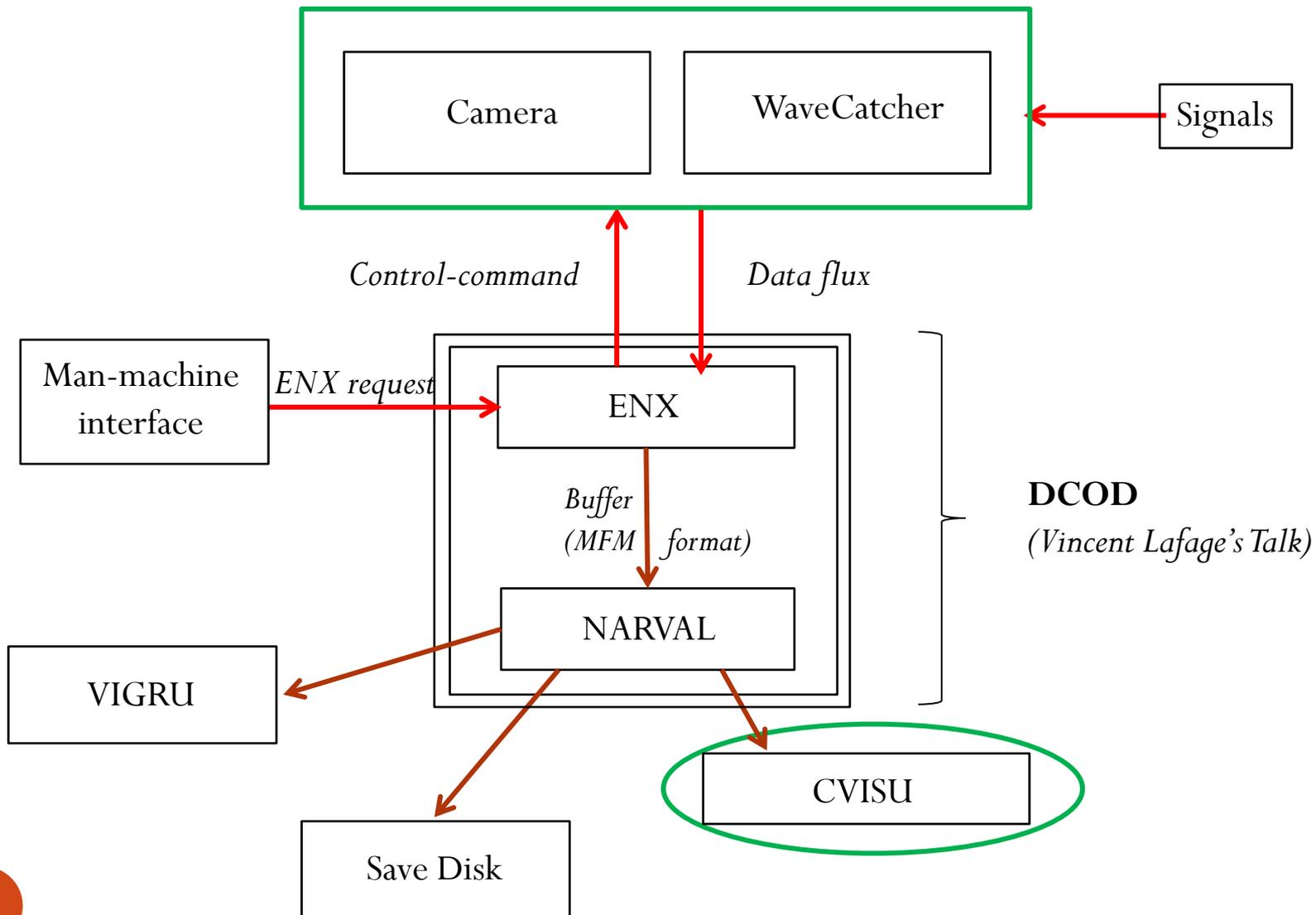
Implement CVISU in the Narval acquisition :

- software to visualize a large number of histogramms produced by remote servers.
- Ergonomic design

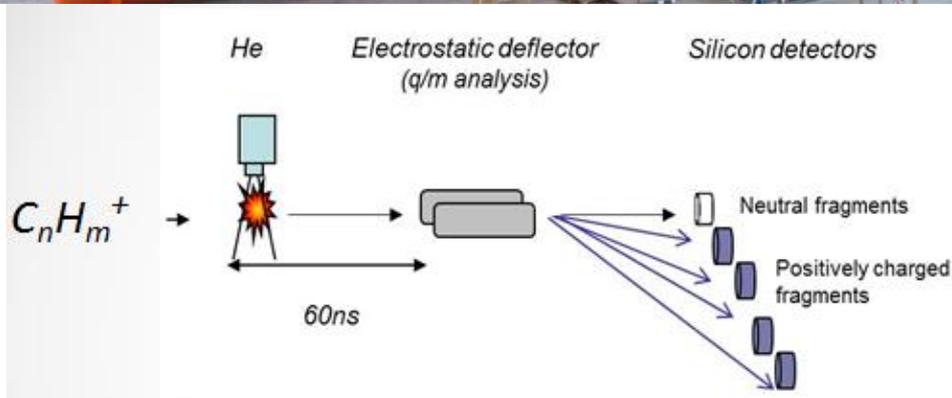
- More ergonomic : easy cuts, fast responses,
- Necessary for an online experiment control.



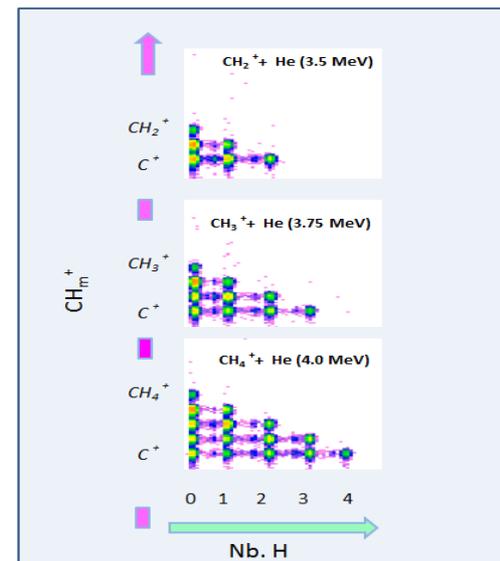
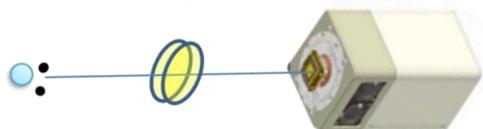
Next step



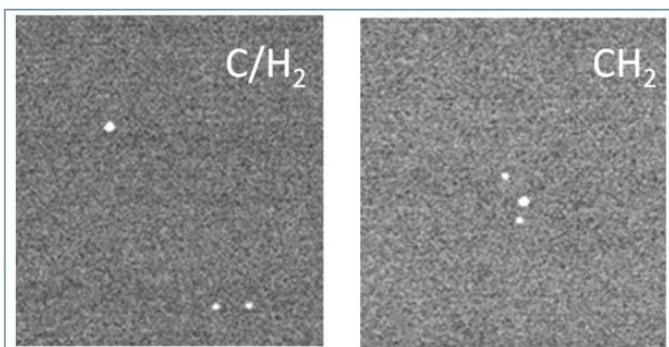
AGAT : molecule fragmentation



CCD camera for neutral fragments



Coincidences between neutral and C+ detectors



We want to connect the camera with the Wavecatcher.

The Narval server has to be able to manage two Data flux :

- The Wavecatcher datas
- The Camera datas



Outlook



- There is a new LINUX interface Wavecatcher. VIGRU is used as a display tool.
- The future project is to connect the camera with the Wavecatcher and implement cvisu as display tool.
- The new acquisition should be ready on June.

