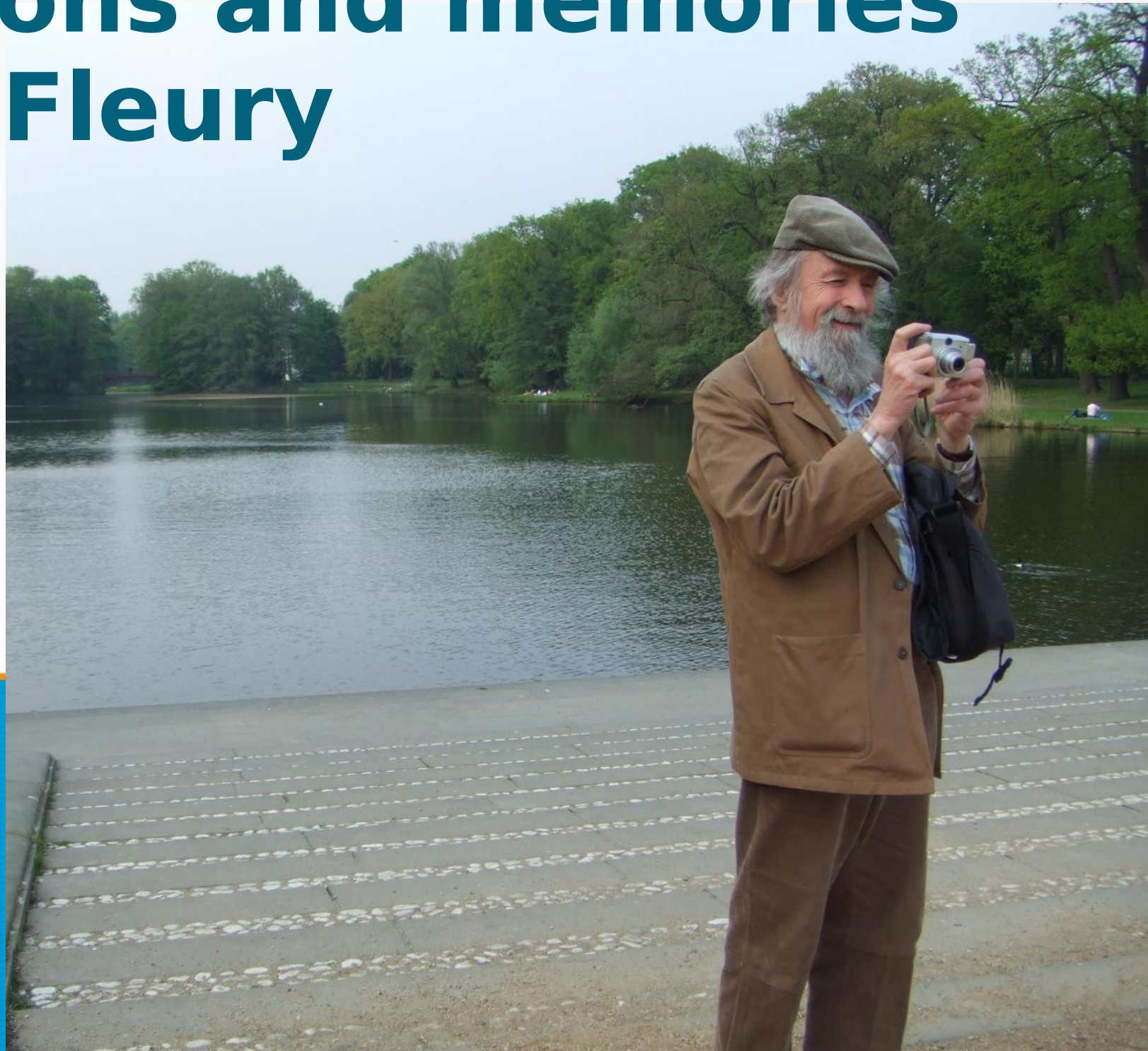


Contributions and memories of Patrick Fleury

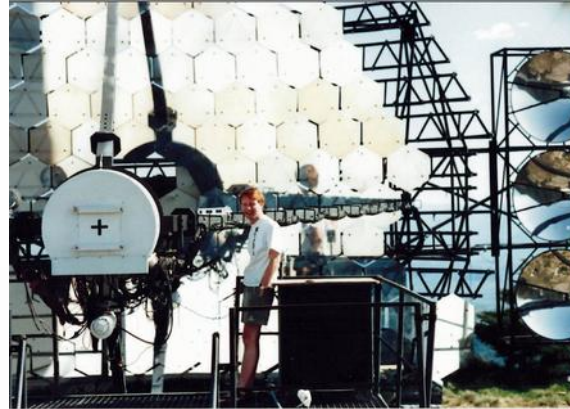
- a powerhouse of projects and a supporter of young physicists

M. Punch



First Encounters at Whipple

- The Polytechnique group came to Whipple Observatory, Arizona, for Artemis
 - I was there for 2 years during my thesis, so I showed them how the telescopes and observations worked.
- The group were a bit like extraterrestrials at Mt Hopkins, with lots of cooking of dinners (with wine, later forbidden) before observing, smoking outside together shivering in the snow
- Dave already mentioned that this experience gave Patrick & Eric a strong taste for gamma-ray astronomy
 - So after being blocked from joining Whipple they started their own French Project, named CAT.
- Patrick invited me to do a post-doc on CAT, with the first task being to translate the "Project Report" document from French into English (even before arriving at Polytechnique!)



Patrick



Marcel



Eric



The advent of CAT

CHERENKOV DETECTION OF GAMMA RAYS AND COSMIC HADRONS

Cherenkov Array at Thémis
CAT
 Project report

Project for a development on the site of the systems THÉMISTOCLE & ASGAT at Thémis associating wave-front sampling with high-definition imaging

France :

- Bernard Degrange ^b, Robert Bazer-Bachi ^d, Jean-Noël Capdevielle ⁱ, Bernard Fabre ^g, Patrick Fleury ^b, Gérard Fontaine ^b, Roger George ^e, Claude Ghesquière ^a, Philippe Goret ^e, Christian Gouffes ^e, Isabelle Grenier ^{e,f}, Christian Meynadier ^g, Ung Nguyen-Khac ^b, Eric Paré ^b, Yvette Pons ^e, Michael Punch ^b, Monique Rivoal ^e, Bruno Rivoire ^h, Marcel Urban ^b & Jirka Vrana ^b.

Other countries :

- Paul Baillon (CERN) ^j, David Egan (Ir.) ^k, Thomas Palfrey (USA) ^l, Gianni Navarra & Carlo Morello (It.) ^m

- ^a LPC - Collège de France & IN2P3;
- ^b LPNHE- Ecole Polytechnique & IN2P3;
- ^c LPNHE- Universités Paris 6-7 & IN2P3;
- ^d CESR, Toulouse & INSU;
- ^e SAp - DAPNIA, CEA-Saclay;
- ^f Université Paris 7;
- ^g Université de Perpignan;
- ^h IMP Odeillo-Perpignan, CNRS;
- ⁱ LPT-Université de Bordeaux I;
- ^j CERN;
- ^k University College, Dublin, Ireland;
- ^l Purdue University, Indiana, USA;
- ^m CNR-INFN, Torino, Italy.

- All the major ideas for CAT were already in the “CAT Project Report”, including:
 - the insistence on using the **timing** for the trigger coincidence, so using comparators instead of discriminators
 - The measurement of the **Single Photo Electron** response for calibration (even if at 3x the nominal gain), which also implied having a shelter, besides being a protection from wind & weather
 - **fine pixelization** and so sectorization of the trigger
 - Even mentioning the possibility of using analogue memories (developed at CERN)
- We find all of these and more, for HESS

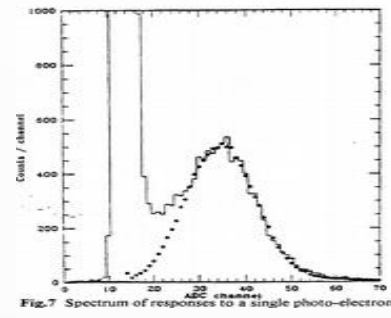
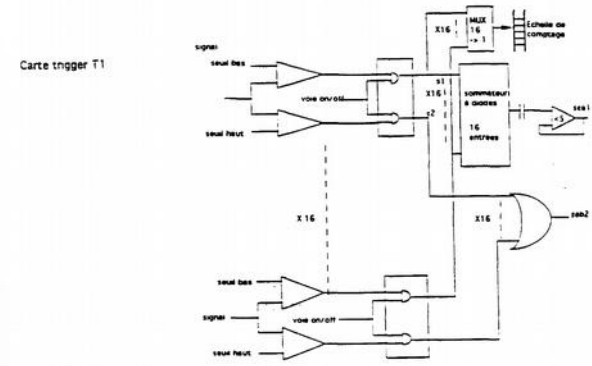


Fig.7 Spectrum of responses to a single photo-electron

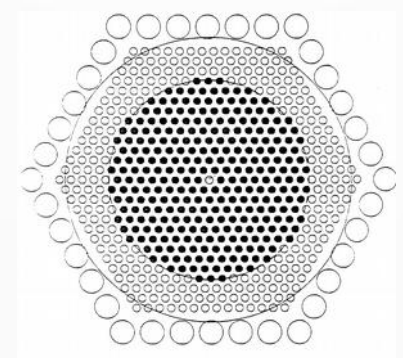


Fig.8 Positions of the PMTs in the camera. Shaded: the trigger PMTs. The two circles are drawn at 17.5 and 25 mrad respectively.

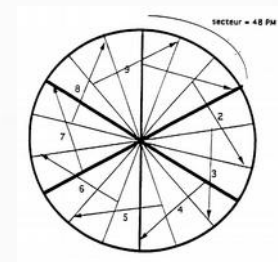


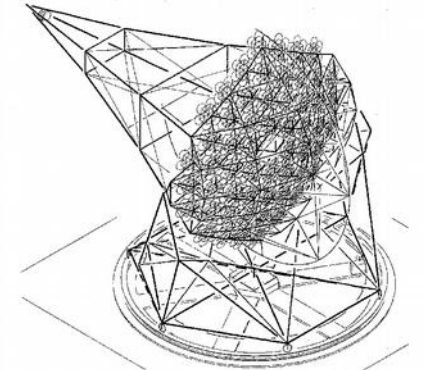
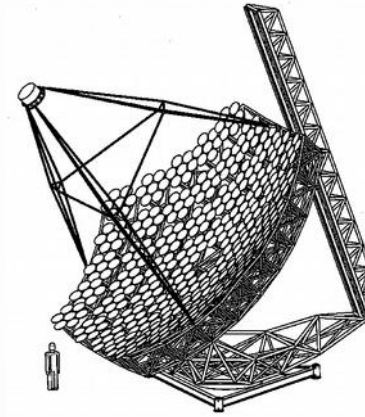
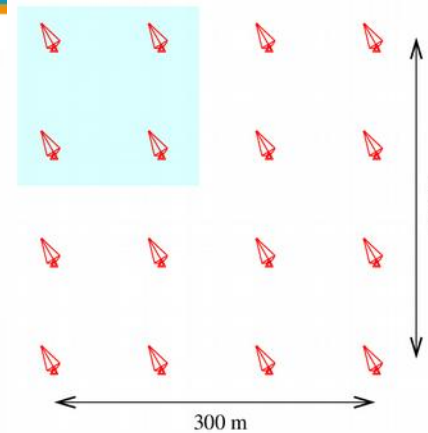
Fig.10 Segmentation for the trigger



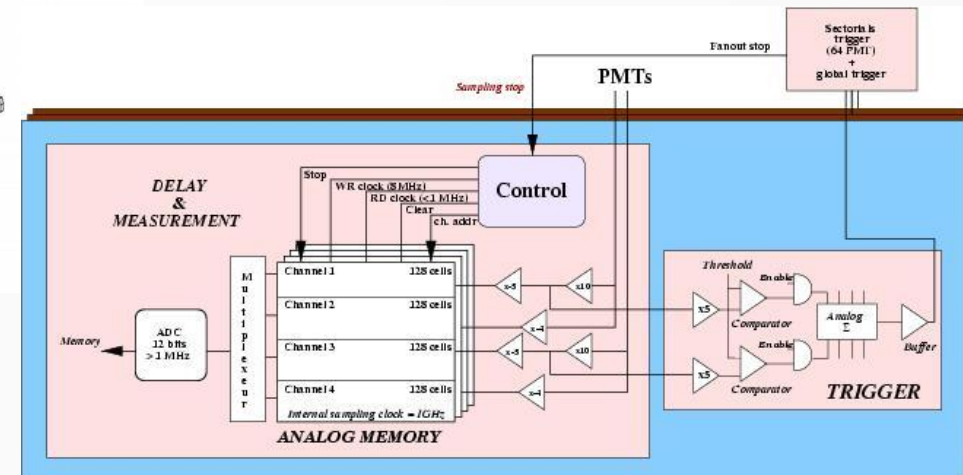
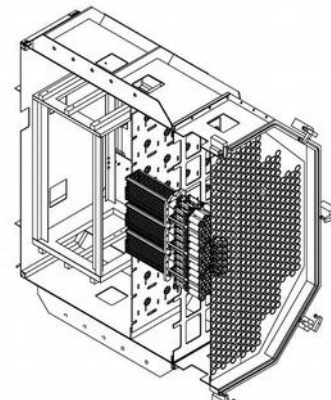
The launch of HESS



- We were a bit surprised at initial HESS proposal
 - 16 telescopes on rails
 - 0.25deg pixels (0.15° as option)
 - site in Calar Alto in Spain
 - (though “fallback” to La Palma, then to Gamsberg in Namibia)
- Patrick’s impassioned speech at Kruger Park workshop
 - The new detector **must** be placed in the **Southern hemisphere**
 - for Galactic science, and since
 - already VERITAS planned in the North, at Whipple
- We then planned for a **French camera**
 - designed by the people working on CAT
 - using many of the same ideas (comparators, fine pixels, SPE),
 - later with the introduction of analogue memories (ARSO, from Antares) by Jussieu (P. Vincent, P. Nayman)



Figures from W. Hoffman, Kruger Park Workshop '97

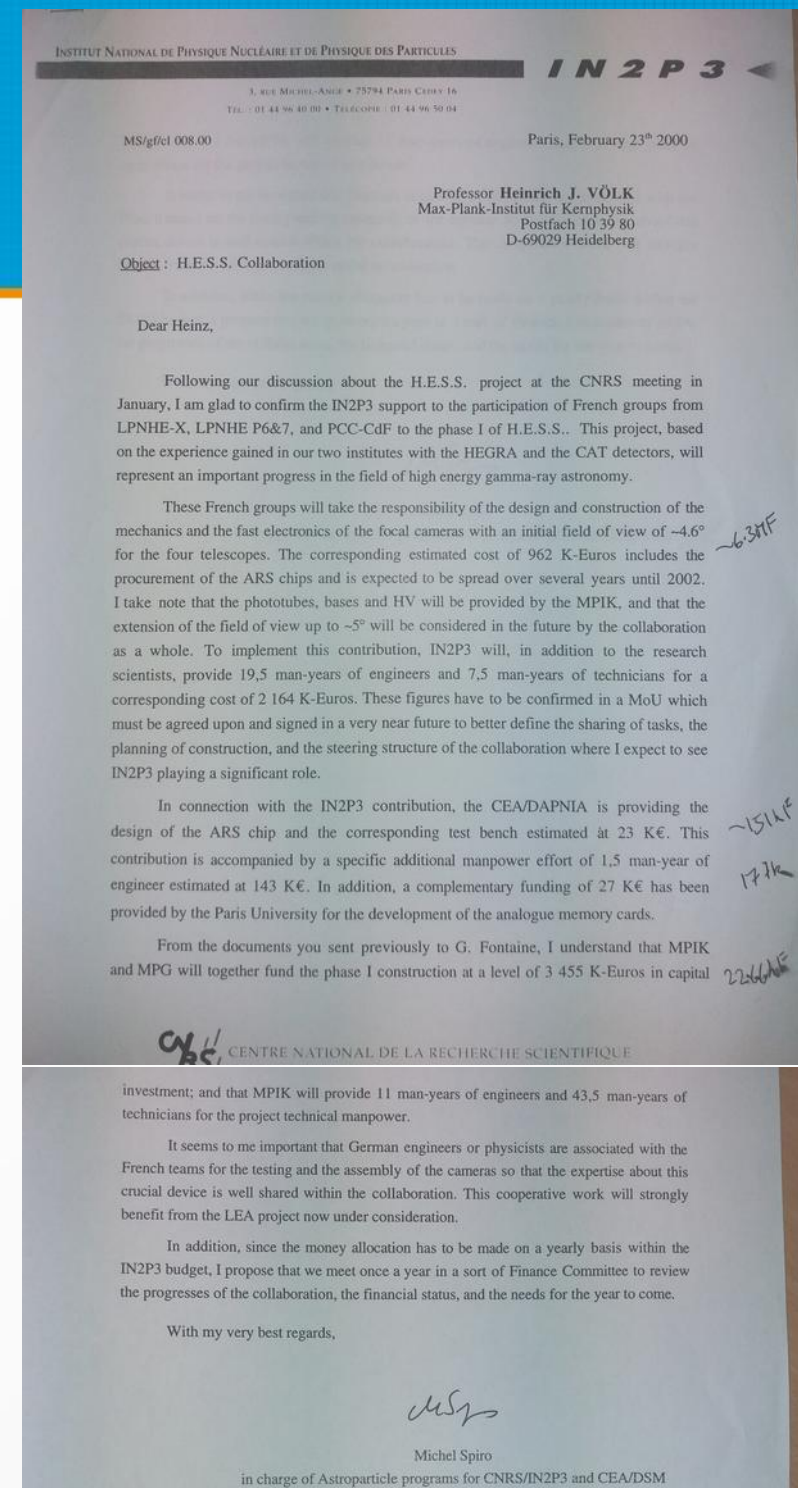


The launch of HESS

- Many difficulties obtaining guarantees for financing for 4 French cameras
 - the authorities proposing initially ½ financed by Germany (although there was already a German-designed camera).
- With the insistence of Patrick and others of us, finally
 - obtained a agreement (Snowmass workshop, 1999) for 1M€ to finance 4 cameras (plus 2M€ manpower), as an offer to make to join HESS
- Even with this offer, difficult get HESS agreement to French cameras
 - though we were convinced as with CAT that the electronics would have a lower threshold thanks to the trigger electronics,
 - better background rejection and resolution thanks to the finer pixelization.
- Patrick remained convinced to the end that the decision was obvious for political reasons, since if HESS had remained a purely German experiment it would have disappeared faced with the German-Spanish-CERN experiment MAGIC
 - but he believed Werner made a trip to the LPNHE to check on the performances of the ARS chips and associated electronics before deciding.
 - Maybe Werner could comment on the politics, now that HESS is nearing the end of its life?

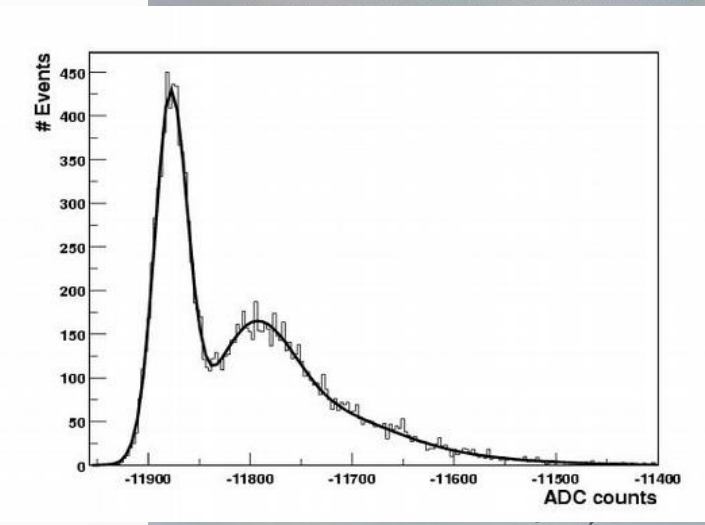
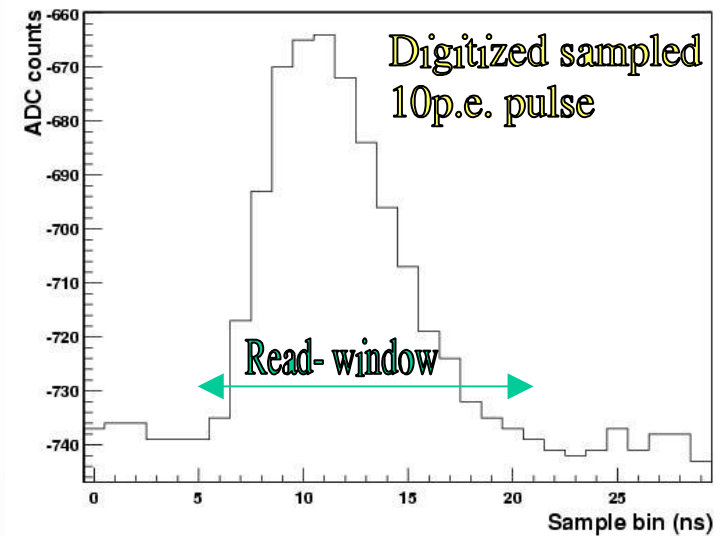
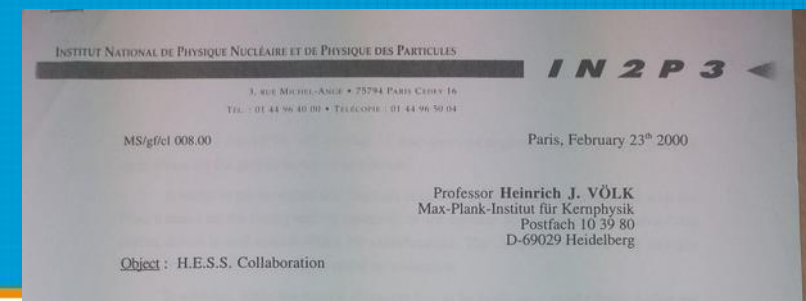
12/09/18

Patrick Fleury Commemoration



The launch of HESS

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ject at the CNRS meeting in
icipation of French groups from
f H.E.S.S.. This project, based
RA and the CAT detectors, will
amma-ray astronomy.

design and construction of the
an initial field of view of -4.6°
of 962 K-Euros includes the
over several years until 2002.
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CEA/DAPNIA is providing the
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lower effort of 1,5 man-year of
ary funding of 27 K€ has been
nory cards.

63MF

1514F

177k

22664E

Michel Spiro
in charge of Astroparticle programs for CNRS/IN2P3 and CEA/DSM

Travels with Patrick

- Many conferences, workshops...
 - Heidelberg, Moriond, Utah, South Africa, MAGIC-I inauguration, Berlin, and ...
 - Dancing on the tables after hours in a village fete near Heidelberg, early 90's
 - Patrick playing with new pedometer, walking 40km in Berlin in 2006 (photo on first page)
- Patrick was not one to schmooze, but still would interact with the key people
 - They would be attracted by his intensity and continuous flow of ideas
 - He would also use humour, especially to try to reduce conflicts, e.g. waltzing with Trevor Weekes at Moriond
- In time off, much exploration of the local environment with discussions
 - Physics, Politics, the end of oil and civilization, the worry about losing mental acuity



Photo from Rene Ong, 2003

Patrick's legacy

- Patrick was always passionate about his work and getting new projects off the ground
- With this dynamic helping young researchers, so became a “father” or “grandfather” to many
 - much time coaching or trying to help people in their careers so the projects would advance, e.g. supporting myself, Arache, Régis, Berrie, Fred, Bruno, Anne to get positions (coaching CNRS auditions...) not with invariable success.
- At ease talking with all the people in labs
 - maybe moreso with the technicians and engineers!
- Fascinated by people with whom he had big conflicts, who once the problem was decided were back to normal in relations after... not really Patrick's way
- A strong talent to mythologize events, like the first observations with CAT or negotiations on HESS, so that everyone seemed larger than life and more heroic (as a motivator)
- His legacy remains in
 - the many projects he launched, resulting in major discoveries
 - the many people he helped along the way, continuing on the paths where he cleared the way