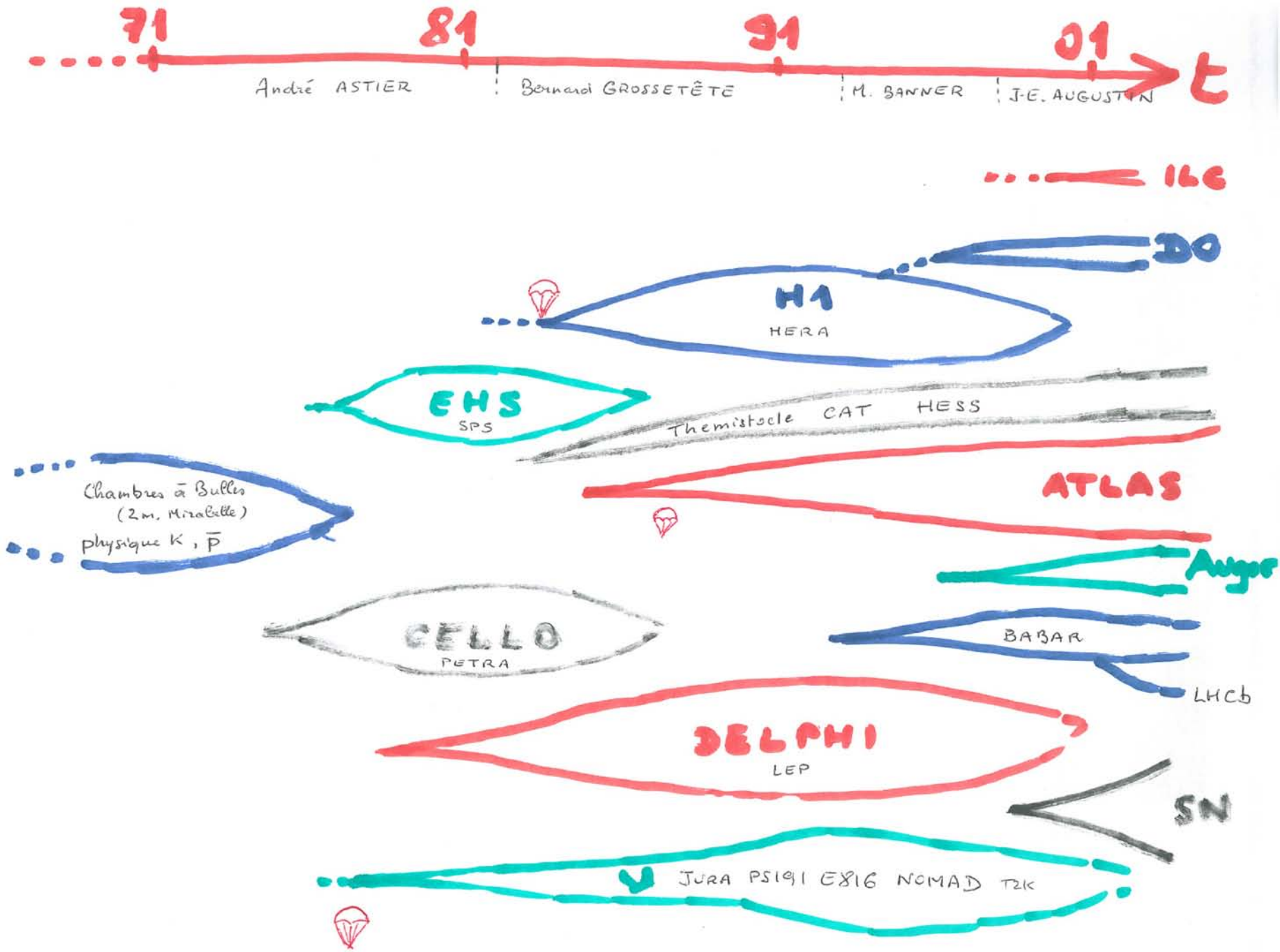
LPNHE 1971-2001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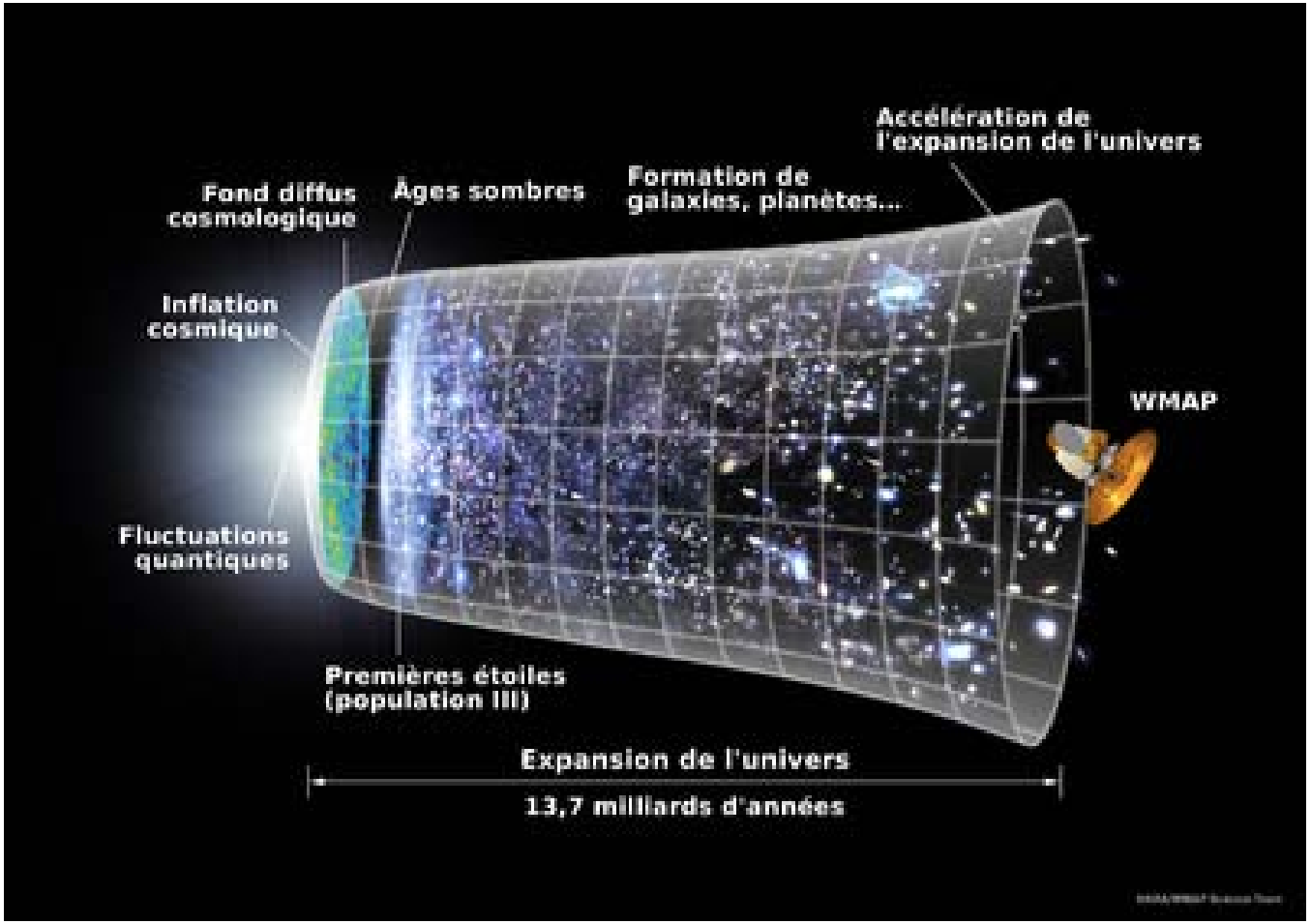
André ASTIER
Bernard GROSSETÊTE
M. BANNER
J-E. AUGUSTIN
ILC
DO
H1
HERA
EHS
SPS
Themistocle CAT HESS
ATLAS
Chambres à Bulles
(2m, Mirabelle)
physique K, $\bar{p}$
Auger
CELLO
PETRA
BABAR
LHCb
DELPHI
LEP
SN
JURA PS191 E816 NOMAD T2K


Accélération de
l'expansion de l'univers
Fond diffus
cosmologique
Âges sombres
Formation de
galaxies, planètes...
Inflation
cosmique
WMAP
Fluctuations
quantiques
Premières étoiles
(population III)
Expansion de l'univers
13,7 milliards d'années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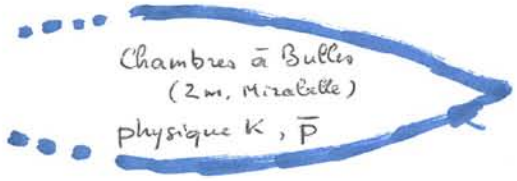
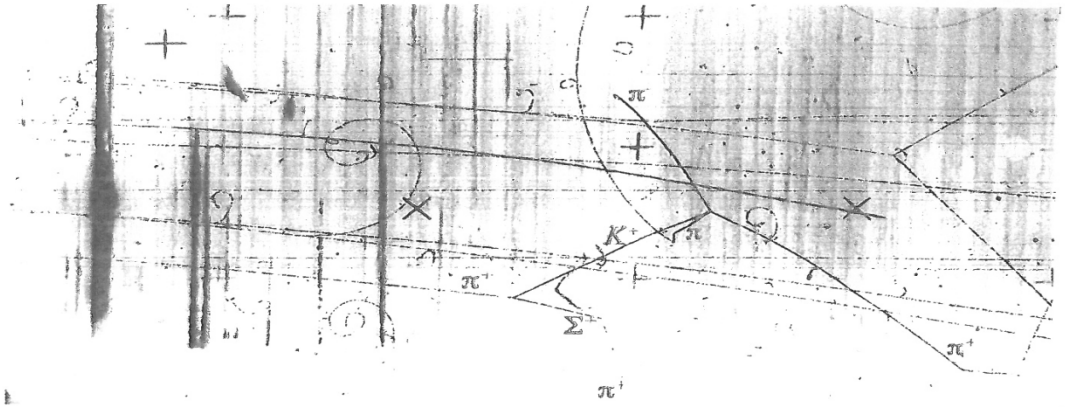
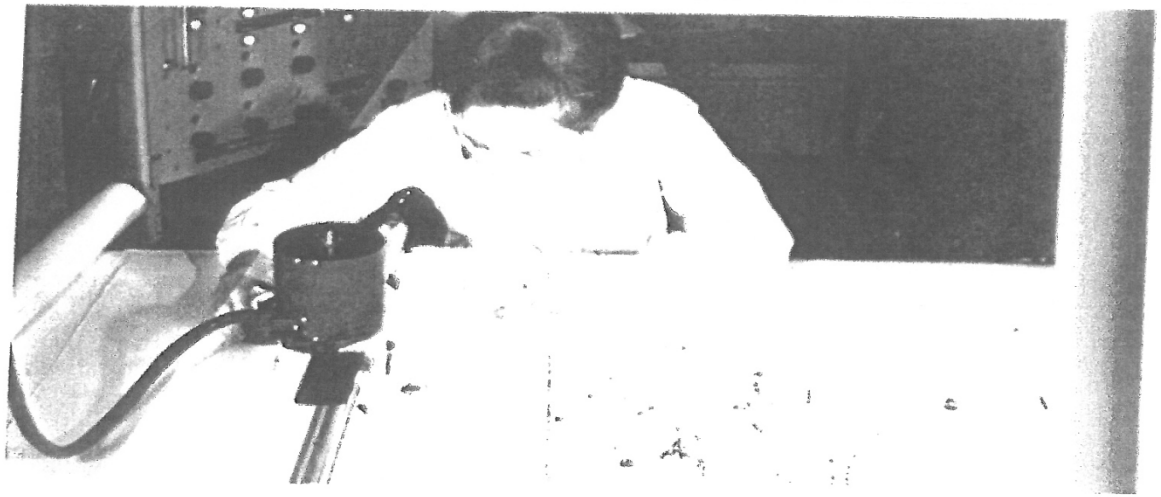
André ASTIER
Bernard GROSSETÊTE
M. BANNER
J-E. AUGUSTIN


Chambres à Bulles
(2m, Mirabelle)
physique K , $\overline{p}$



CLICHÉ D'UNE CRÉATION ASSOCIÉE
La réaction est celle d'un méson π^+ sur un proton avec création d'un baryon Σ^+, associé à un méson K^+. Ces deux particules se désintègrent presque immédiatement, le Σ^+ donnant naissance à un méson π^+ et à un neutron non détecté, le méson K^+ à trois mésons π^+.
Toutes les séquences sont enregistrées dans le même cliché.

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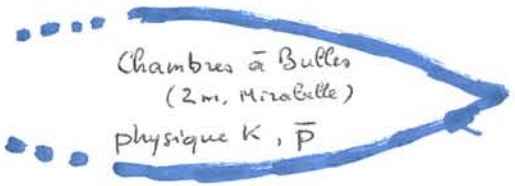
EHS


Chambres à Bulles
(2m, Mirabelle)
physique K, $\bar{p}$


CELLO

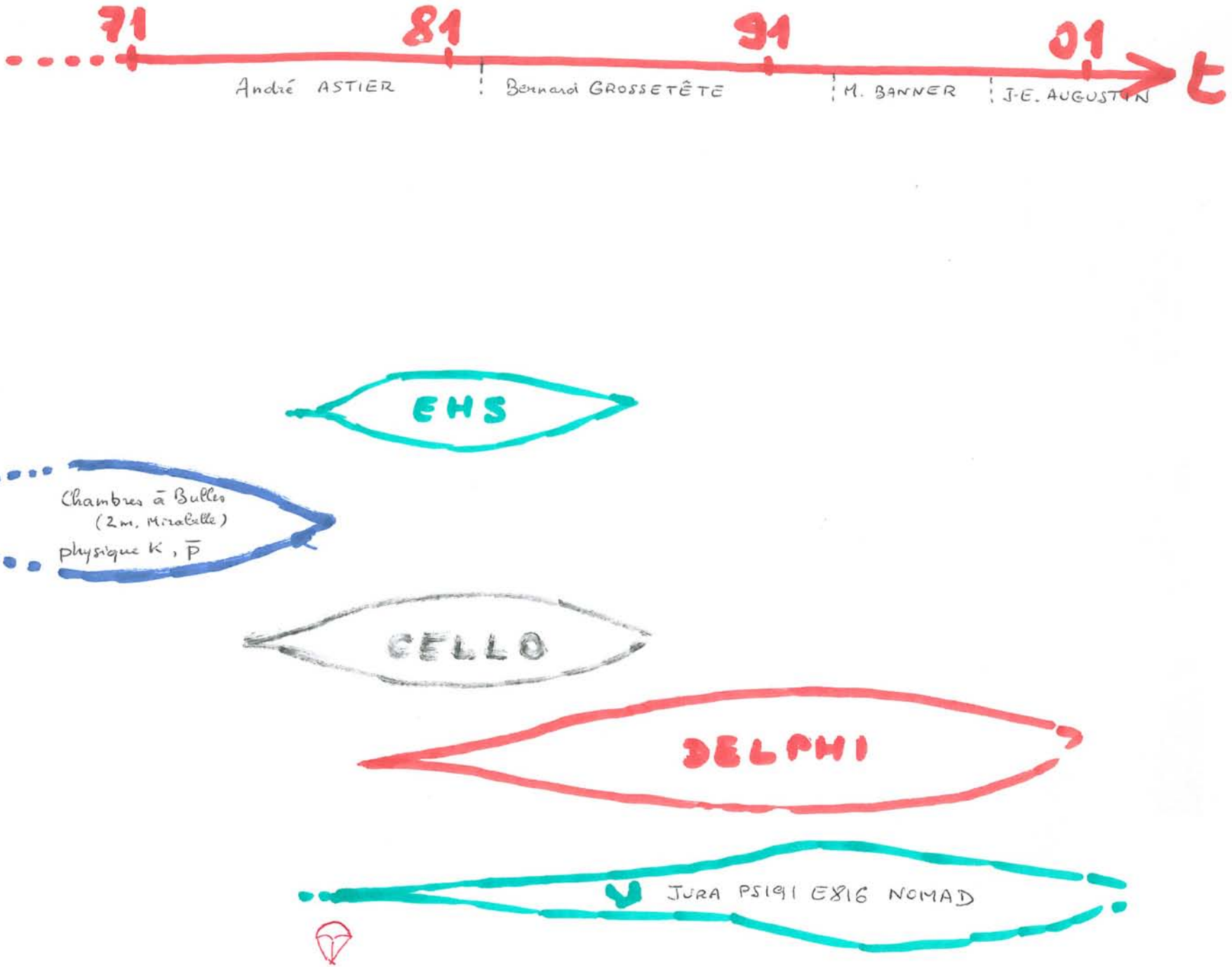
DESY-PETRA-CELLO Experiment

A 4 PI MAGNETIC DETECTOR FOR PETRA --- CELLO
(Proposed: 29 July 1976, Approved: 19 Oct. 1976, Began: March 1980, Completed: Nov. 1986)

Spokesperson is C. Kiesling

The central part of the CELLO detector consists of proportional and drift chambers placed within a superconducting coil. The coil is surrounded by liquid argon calorimeters which measure electron and photon energies with high accuracy. Lead glass counter systems cover forwards and backwards directions. The detector is optimized for studies involing photons and electrons.

Collaboration
DESY
H.J. Behrend, J.H. Field, V. Schroeder, H. Sindt
Karlsruhe U., EKP
D. Apel, J. Bodenkamp, D. Crobaczek, J. Engler, G. Fluegge, D. Fries, F. Moennig, H. Mueller, H. Randoll, G. Schmidt, H. Schneider
Munich, Max Planck Inst.
W. De Boer, G. Buschhorn, G. Grindhammer, P. Grosse-Wiesmann, B. Gunderson, C. Kiesling, R. Kotthaus, H. Lierl, D. Luers, T. Meyer, L. Moss, H. Oberlack, P. Schacht, M.J. Schachter, A. Snyder, H. Steiner
Orsay, LAL
G. Carnesecchi, A. Cordier, M. Davier, F. Le Diberder, D. Fournier, J.F. Grivaz, J. Haissinski, V. Journe, F. Laplanche, J.J. Veillet, A. Weitsch
Paris U., VI-VII
R. George, M. Goldberg, B. Grossetete, F. Kapusta, F. Kovacs, F. Laplanche, G. London, L. Poggioli, M. Rivoal, J.J. Veillet, A. Weitsch
Saclay
R. Aleksan, J. Bouchez, G. Cozzika, Y. Ducros, A. Gaidot, J. Pamela, J.P. Pansart, F. Pierre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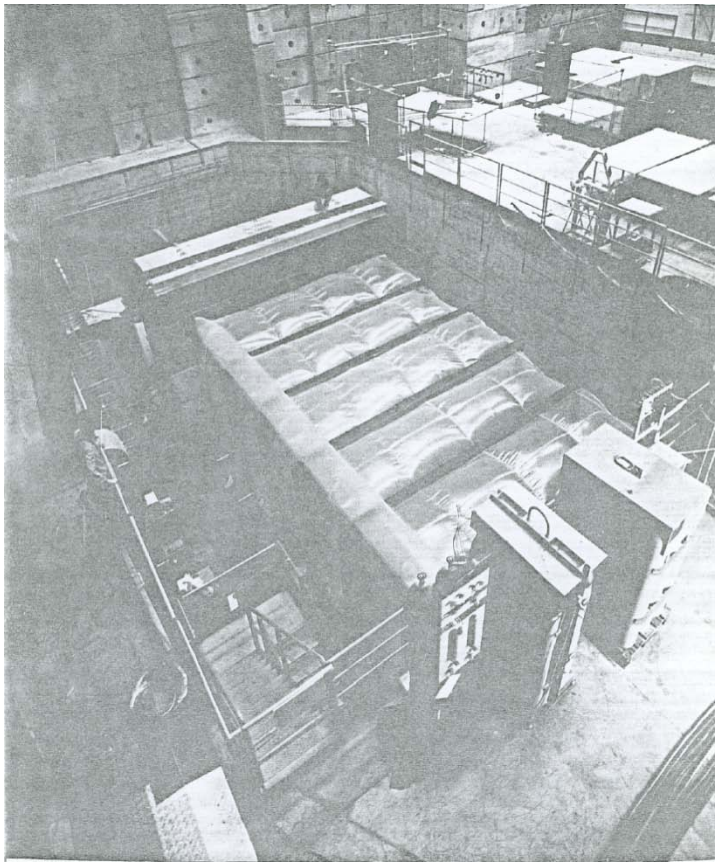
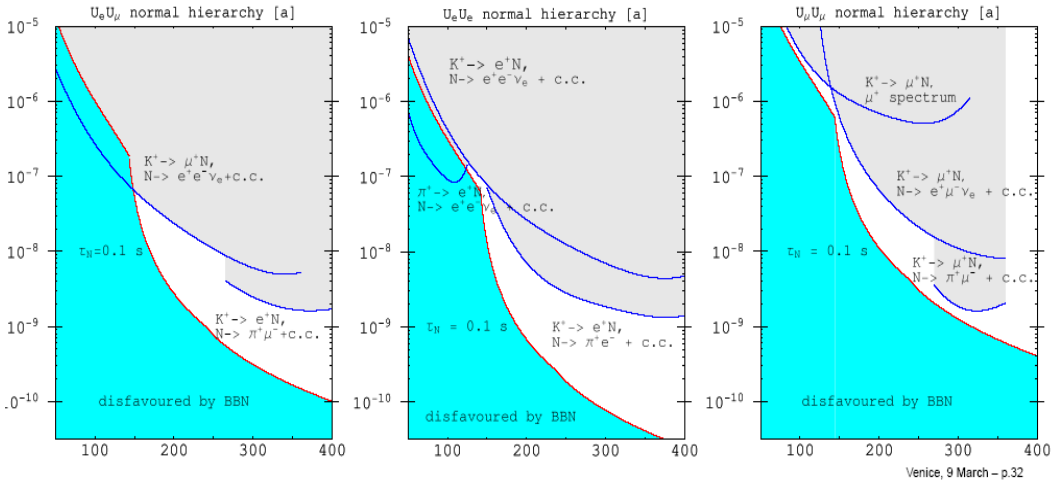
(2m, Mirabelle)
physique K, $\bar{p}$
CELLO
DELPHI
JURA PS191 E816 NOMAD




U_eU_μ normal hierarchy [a]
$K^+ \to \mu^+ N$, $N \to e^+ e^- \nu_e$ + c.c.
τ_N=0.1 s
$K^+ \to e^+ N$, $N \to \pi^+ \mu^-$ + c.c.
disfavoured by BBN
U_eU_e normal hierarchy [a]
$K^+ \to e^+ N$, $N \to e^+ e^- \nu_e$ + c.c.
$\pi^+ \to e^+ N$, $N \to e^+ e^- \nu_e$ + c.c.
τ_N = 0.1 s
$K^+ \to e^+ N$, $N \to \pi^+ e^-$ + c.c.
disfavoured by BBN
$U_\mu U_\mu$ normal hierarchy [a]
$K^+ \to \mu^+ N$, μ^+ spectrum
$K^+ \to \mu^+ N$, $N \to e^+ \mu^- \nu_e$ + c.c.
τ_N = 0.1 s
$K^+ \to \mu^+ N$, $N \to \pi^+ \mu^-$ + c.c.
disfavoured by BBN
10^{-5}
10^{-6}
10^{-7}
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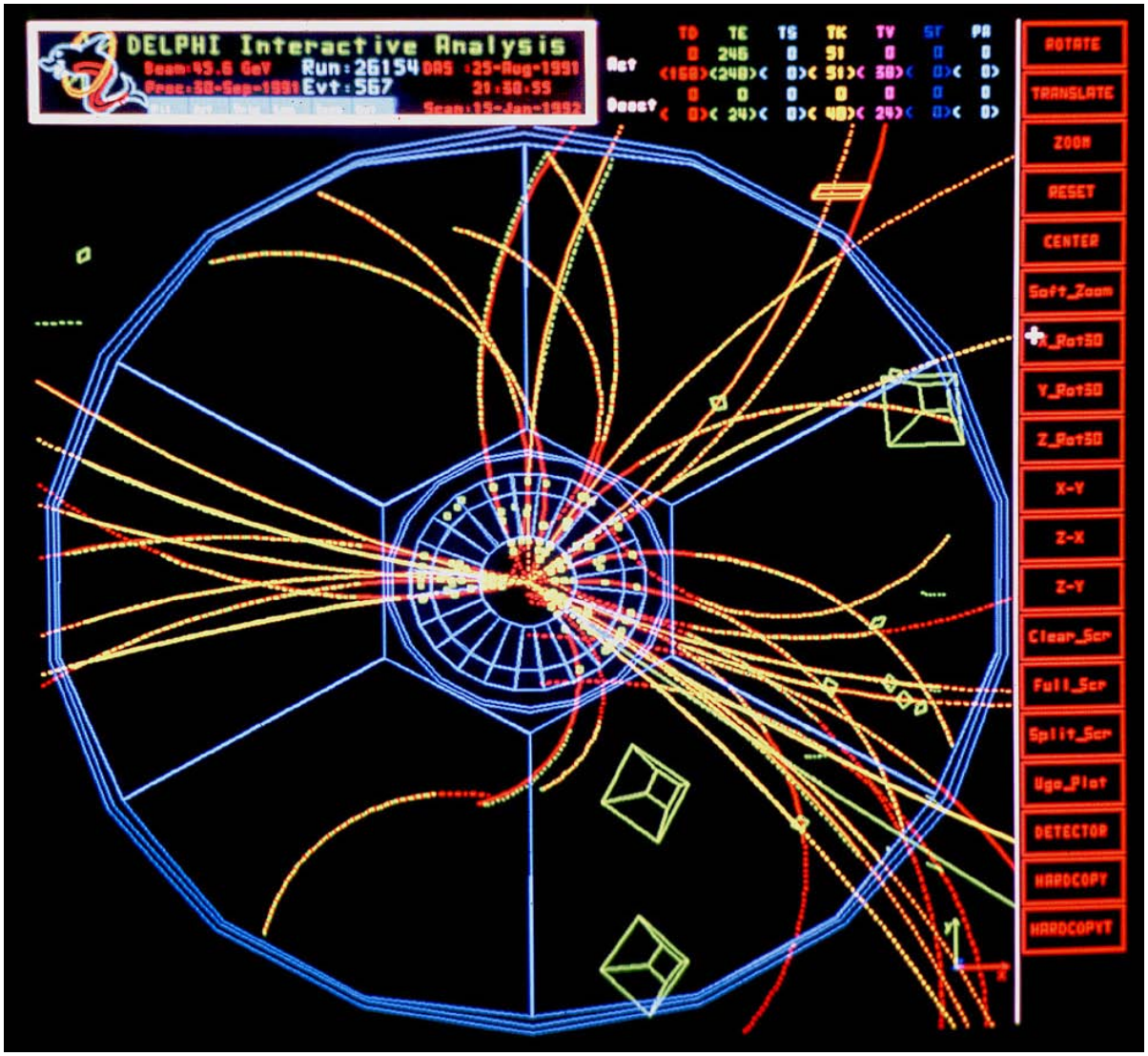
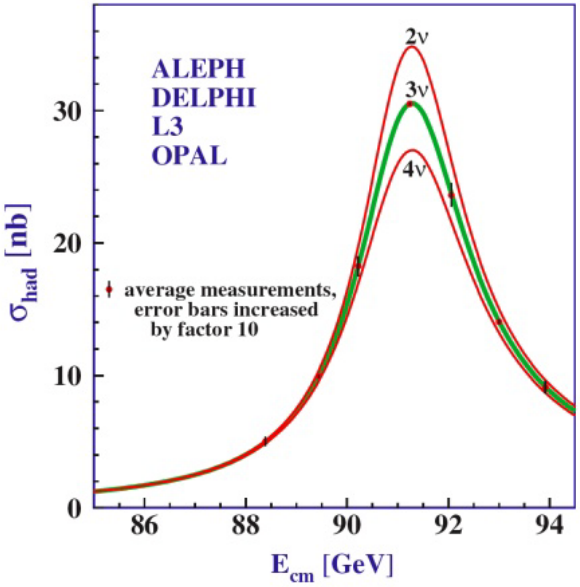
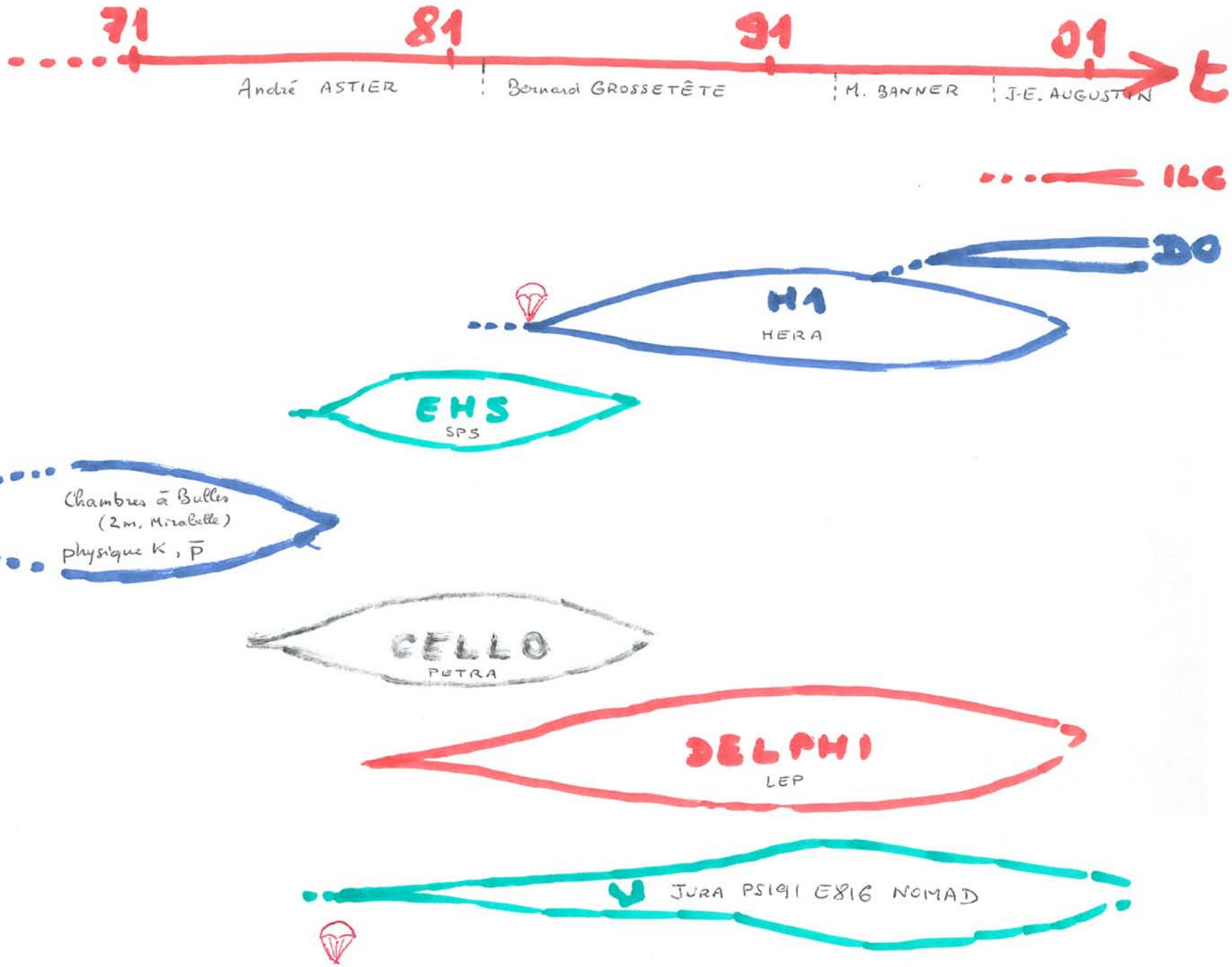
10^{-9}
10^{-10}
100
200
300
400


DELPHI Interactive Analysis
Beam:45.6 GeV Run:26154 DAS :25-Aug-1991
Proc:30-Sep-1991 Evt:567 21:30:55
Scan:15-Jan-1992
TD TE TS TK TV ST PA
Det
Reset
ROTATE
TRANSLATE
ZOOM
RESET
CENTER
Soft_Zoom
X_Rot30
Y_Rot30
Z_Rot30
X-Y
Z-X
Z-Y
Clear_Scr
Full_Scr
Split_Scr
Ugo_Plot
DETECTOR
HARDCOPY
HARDCOPYT


ALEPH
DELPHI
L3
OPAL
2ν
3ν
4ν
average measurements,
error bars increased
by factor 10
σhad [nb]
Ecm [GeV]
0
10
20
30
86
88
90
92
94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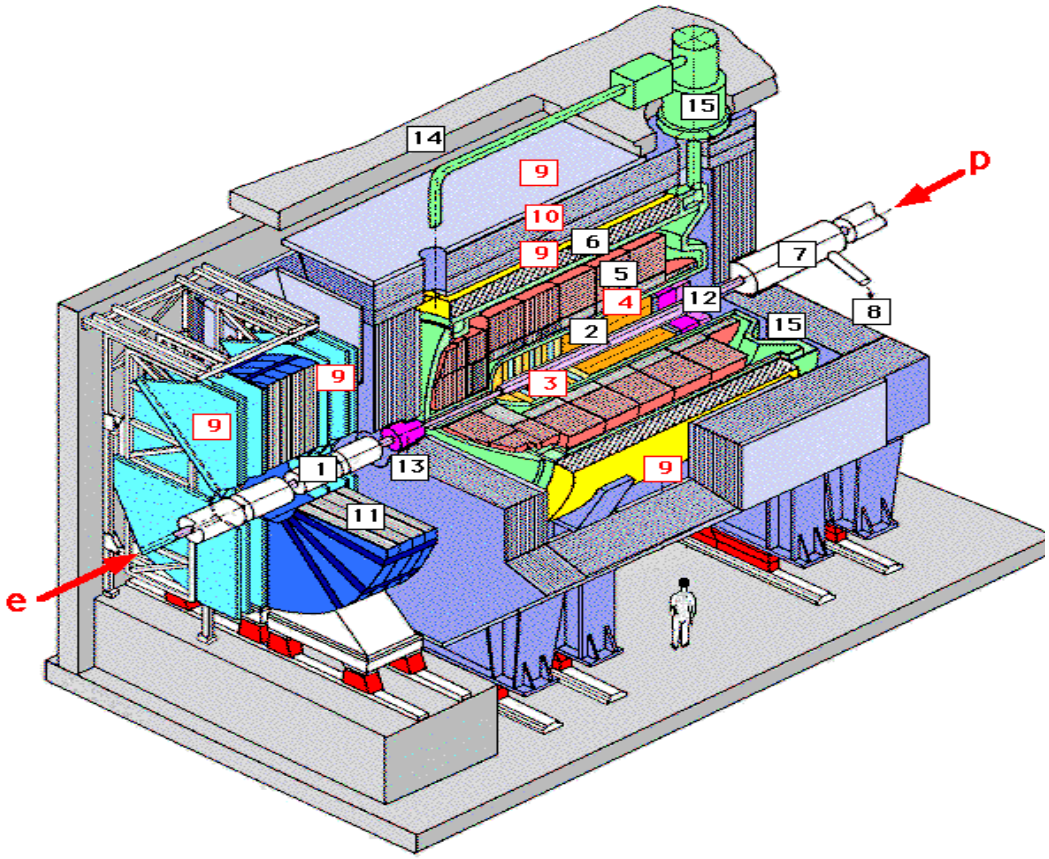
physique K, $\bar{P}$
CELLO
PETRA
DELPHI
LEP
JURA PS191 E816 NOMAD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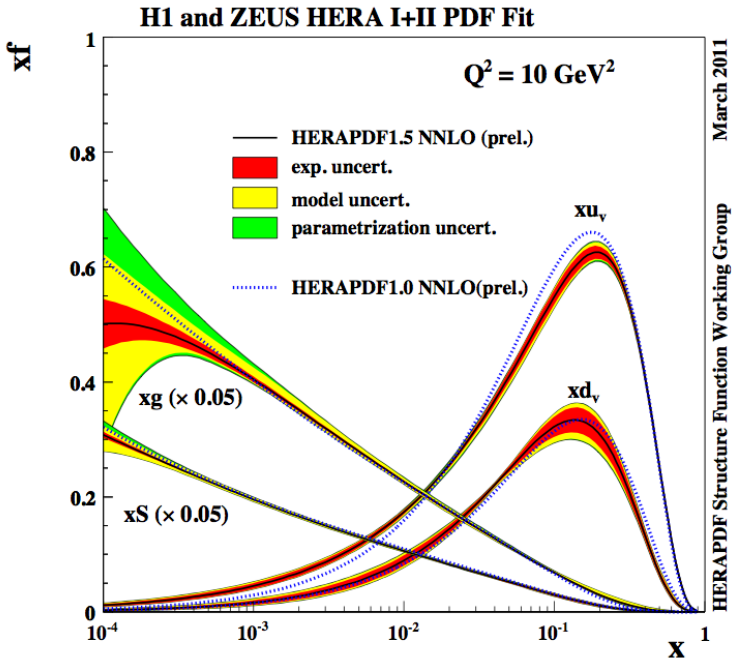
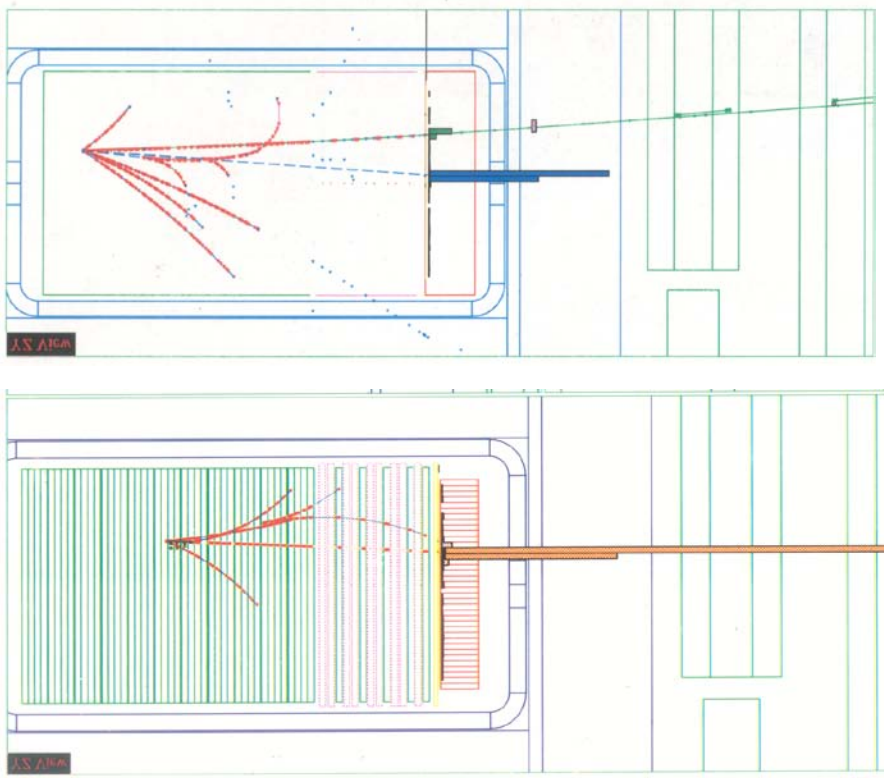
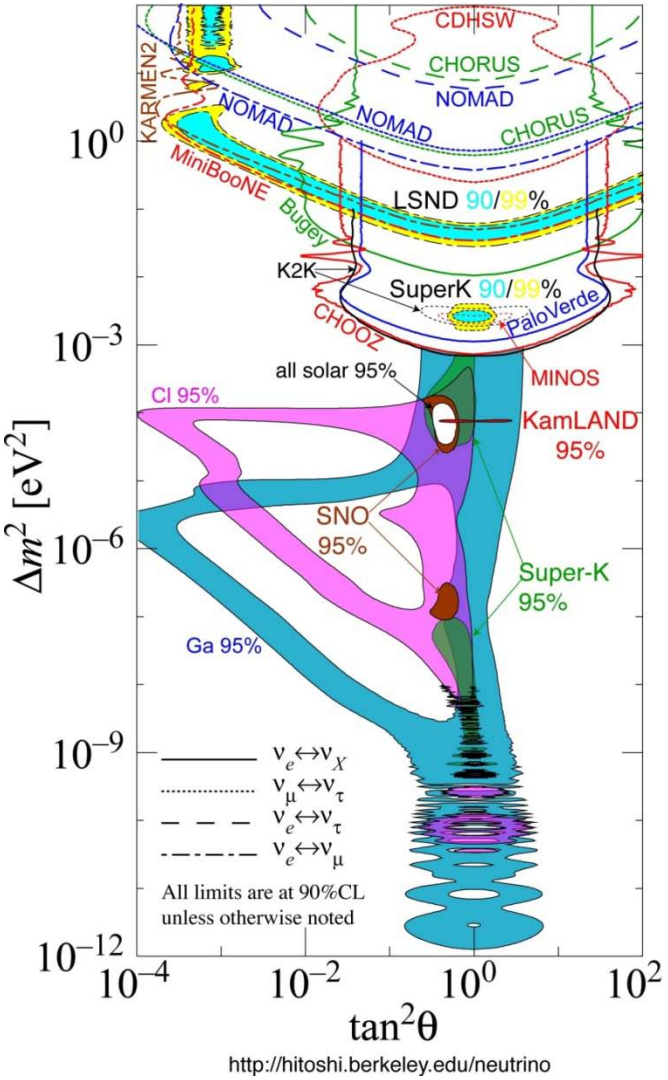
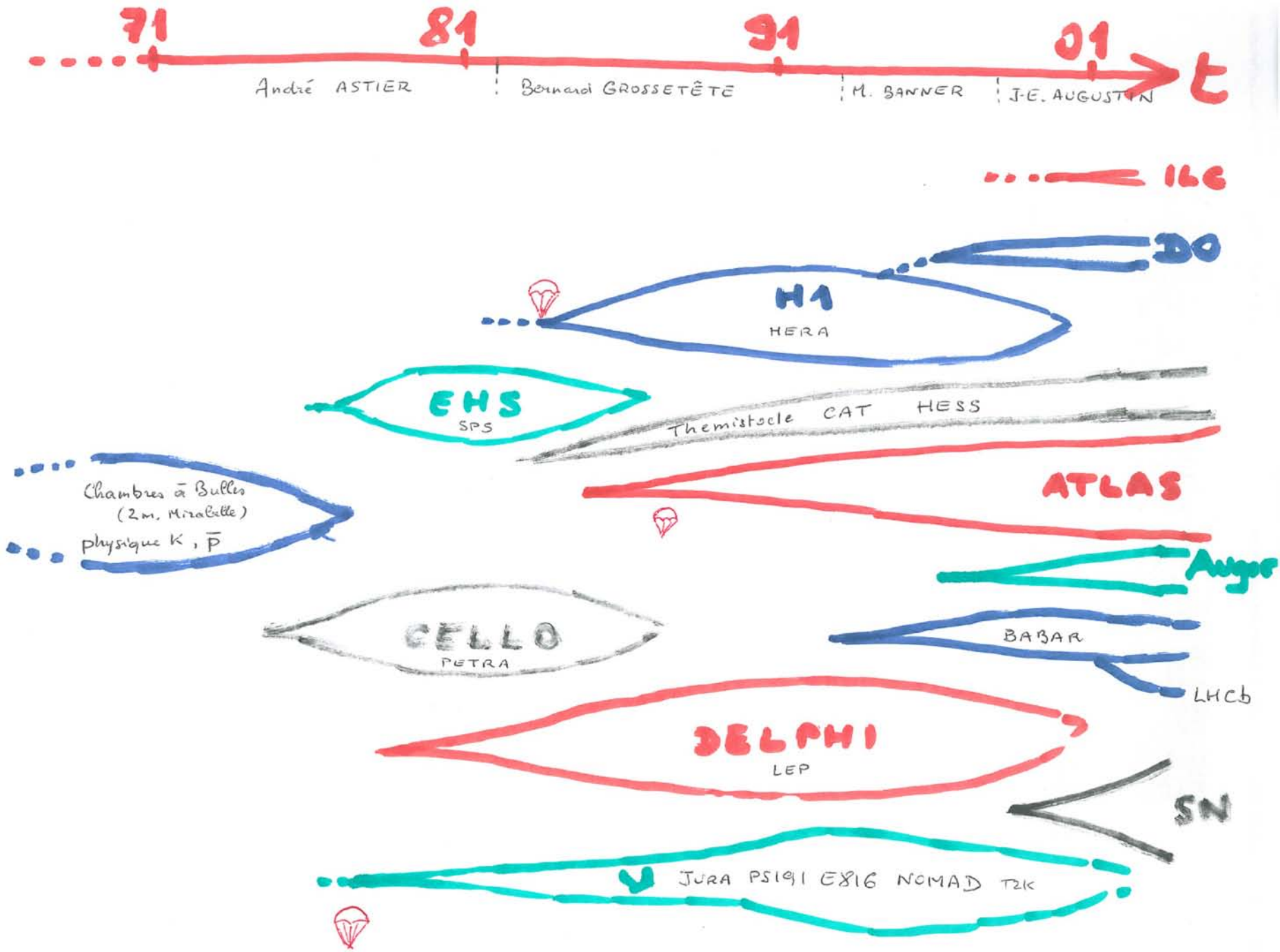

H1 and ZEUS HERA I+II PDF Fit
$Q^2 = 10\ GeV^2$
HERAPDF1.5 NNLO (prel.)
exp. uncert.
model uncert.
parametrization uncert.
HERAPDF1.0 NNLO(prel.)
xu_v
xd_v
xg (× 0.05)
xS (× 0.05)
xf
x
March 2011
HERAPDF Structure Function Working Group





http://hitoshi.berkeley.edu/neutrino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physique K, $\bar{p}$
Auger
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DELPHI
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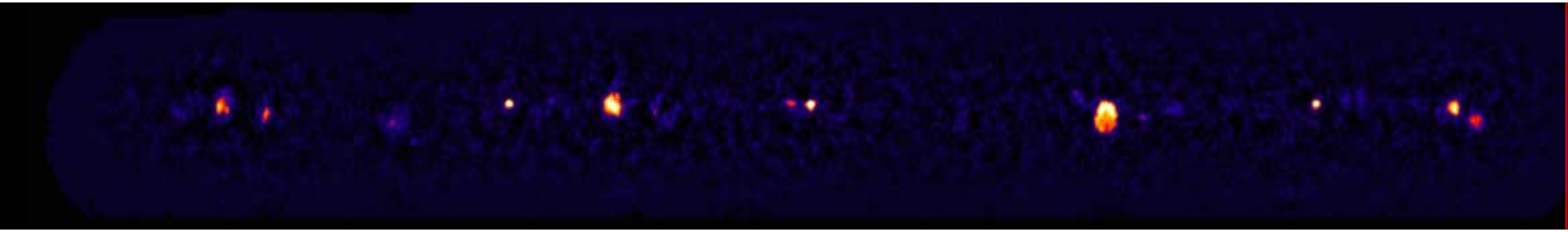
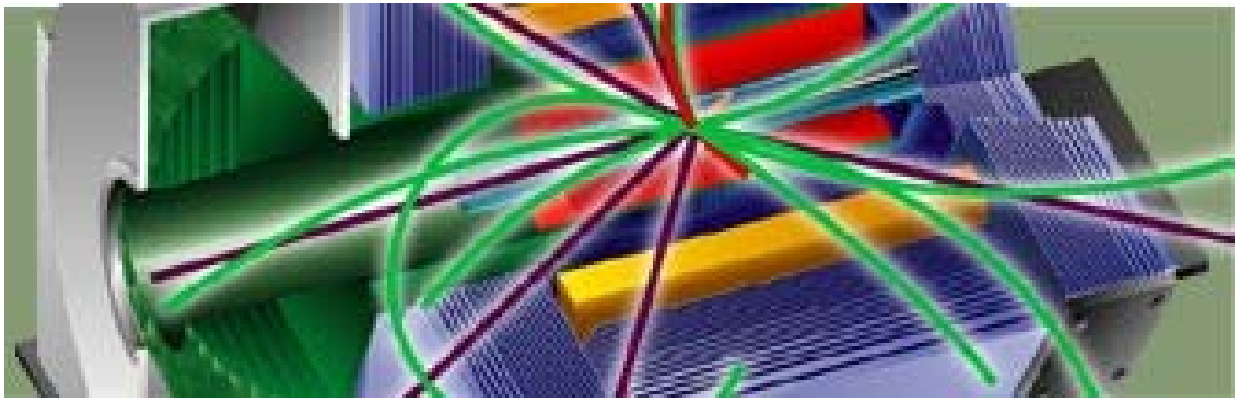
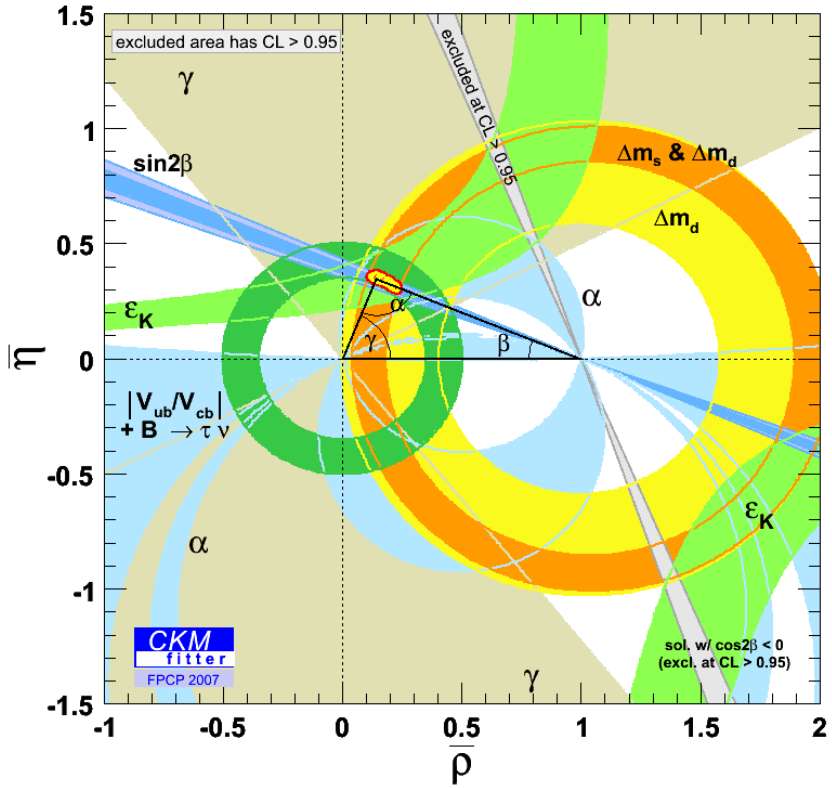
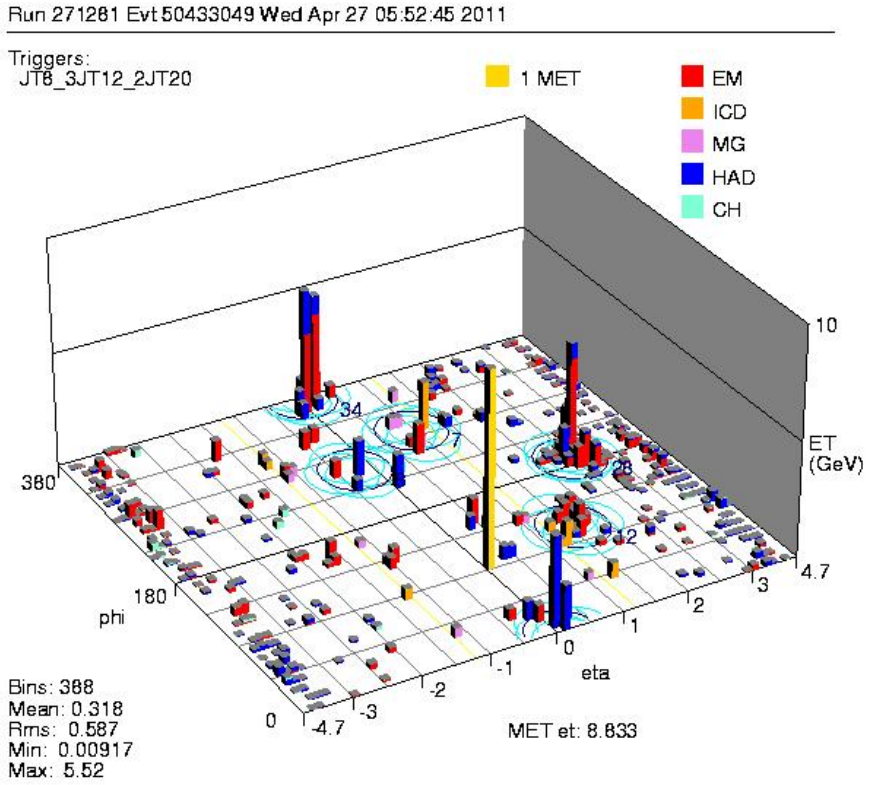
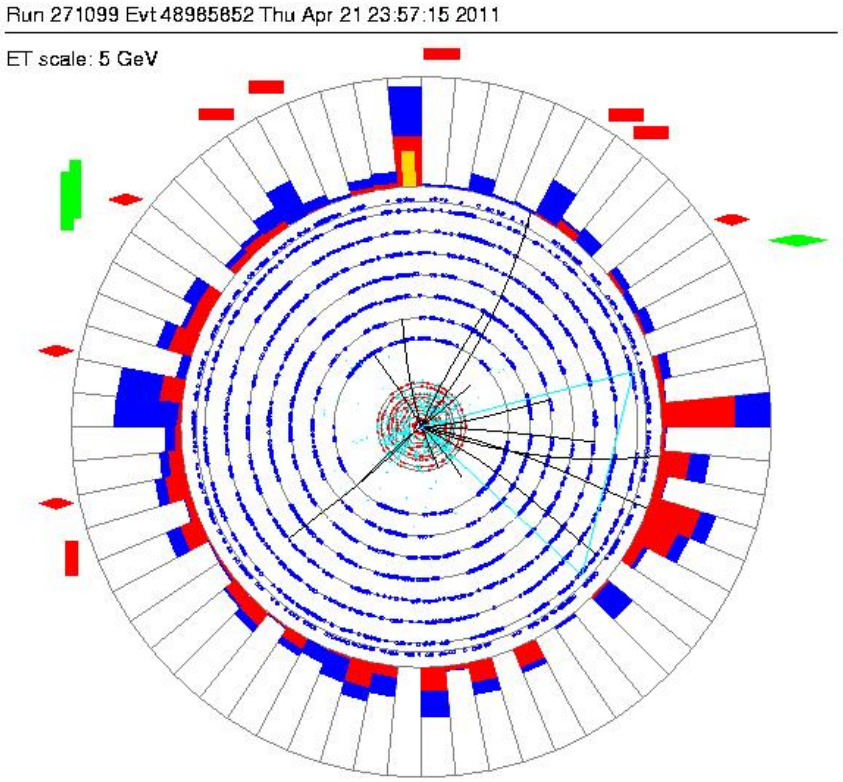
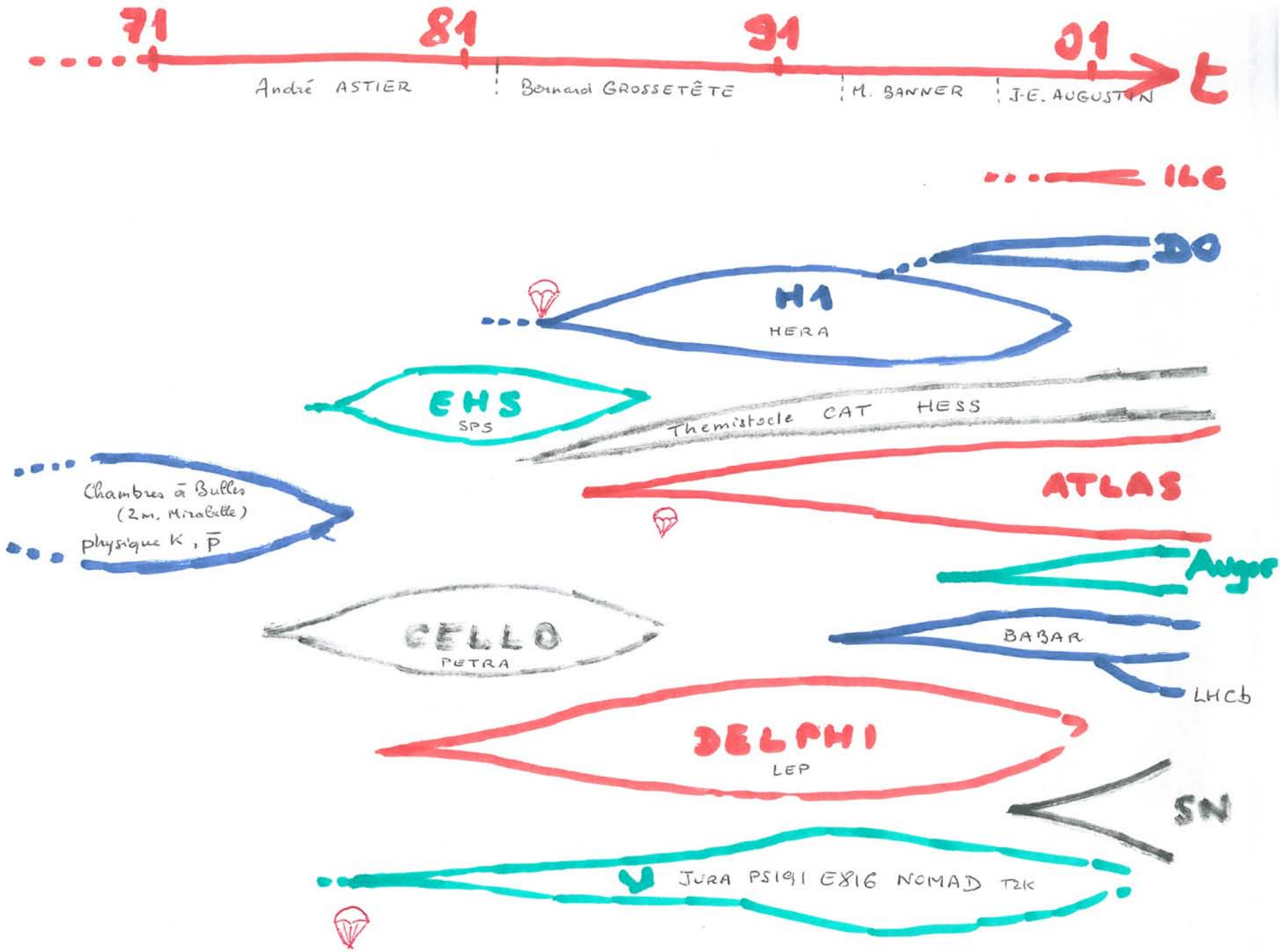





excluded area has CL > 0.95
excluded at CL > 0.95
γ
sin2β
Δm_s & Δm_d
Δm_d
α
ε_K
α
γ
β
|V_ub/V_cb|
+ B → τ ν
α
ε_K
γ
CKM fitter
FPCP 2007
sol. w/ cos2β < 0
(excl. at CL > 0.95)
1.5
1
0.5
0
-0.5
-1
-1.5
-1
-0.5
0
0.5
1
1.5
2
η̄
ρ̄


Run 271261 Evt 50433049 Wed Apr 27 05:52:45 2011
Triggers:
JT8_3JT12_2JT20
1 MET
EM
ICD
MG
HAD
CH
10
ET
(GeV)
4.7
380
180
0
phi
-4.7
-3
-2
-1
0
1
2
3
eta
34
7
28
12
Bins: 388
Mean: 0.318
Rms: 0.587
Min: 0.00917
Max: 5.52
MET et: 8.833


Run 271099 Evt 48985852 Thu Apr 21 23:57:15 2011
ET scale: 5 GeV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physique K, $\bar{p}$
Auger
CELLO
PETRA
BABAR
LHCb
DELPHI
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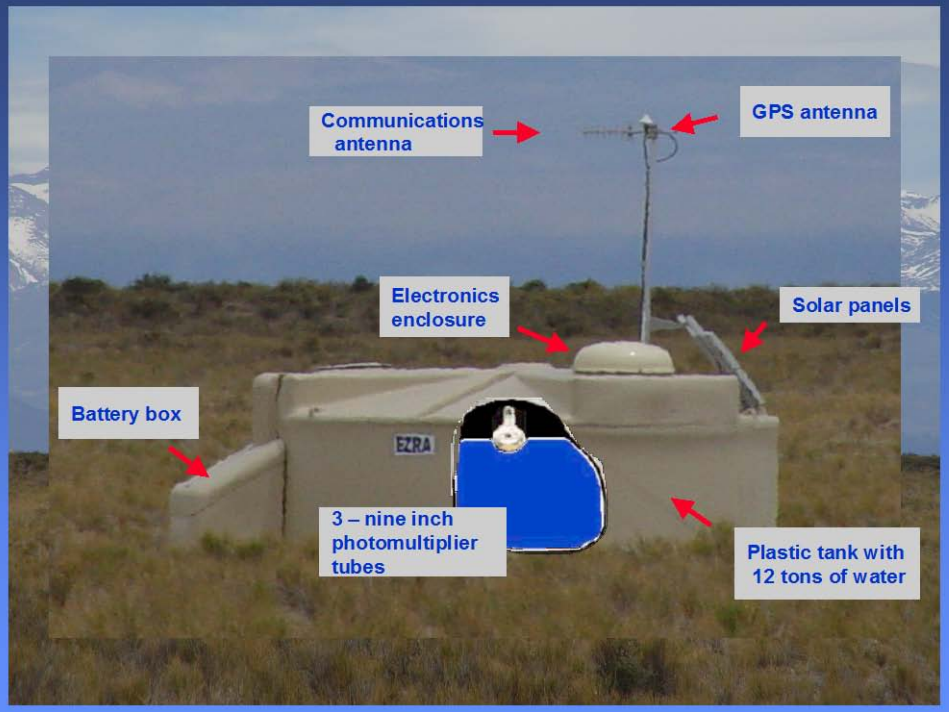
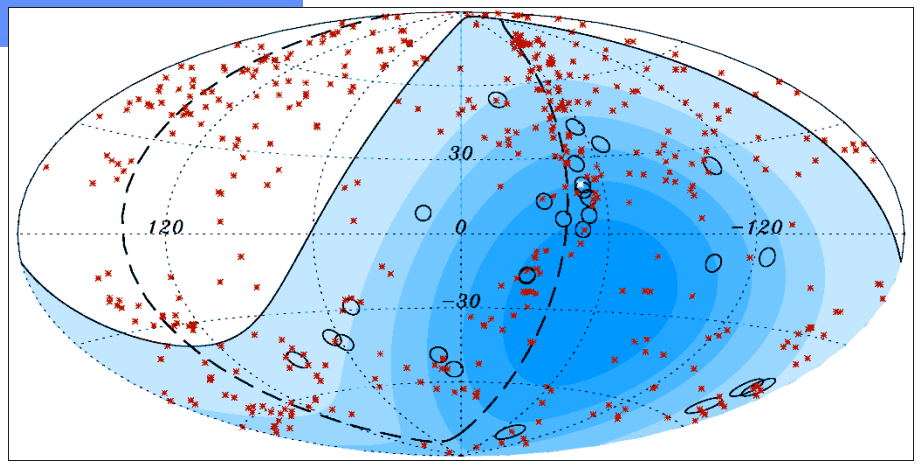
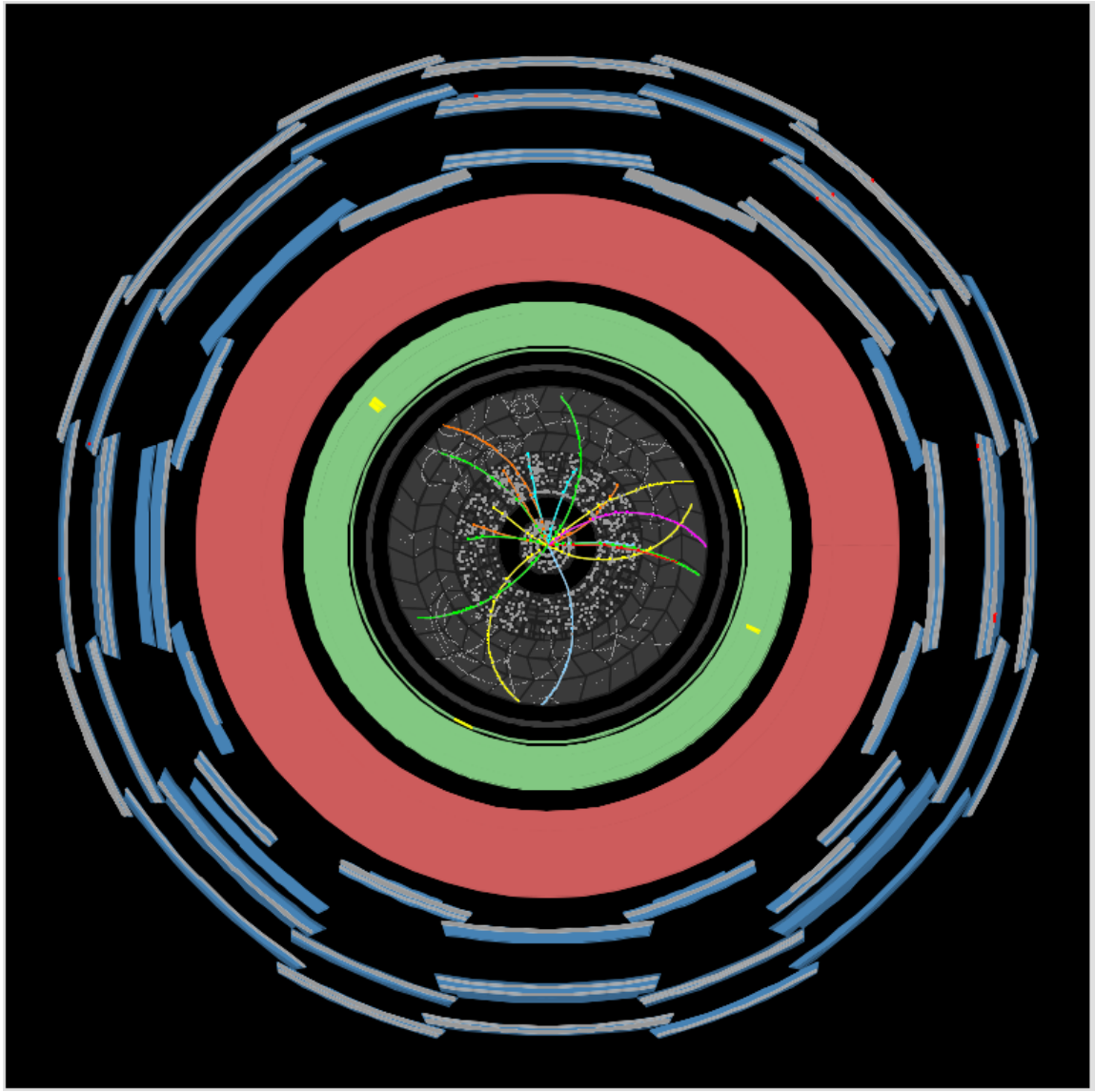
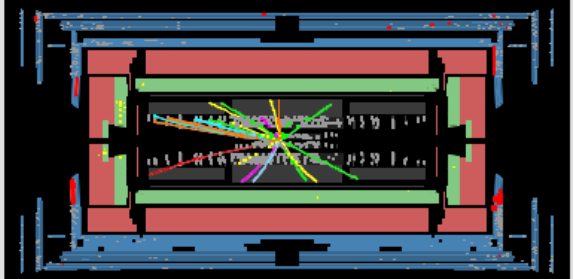
SN
JURA PS191 E816 NOMAD T2K

The Surface Array Detector Station









ATLAS EXPERIMENT

Run Number: 180309, Event Number: 85773930

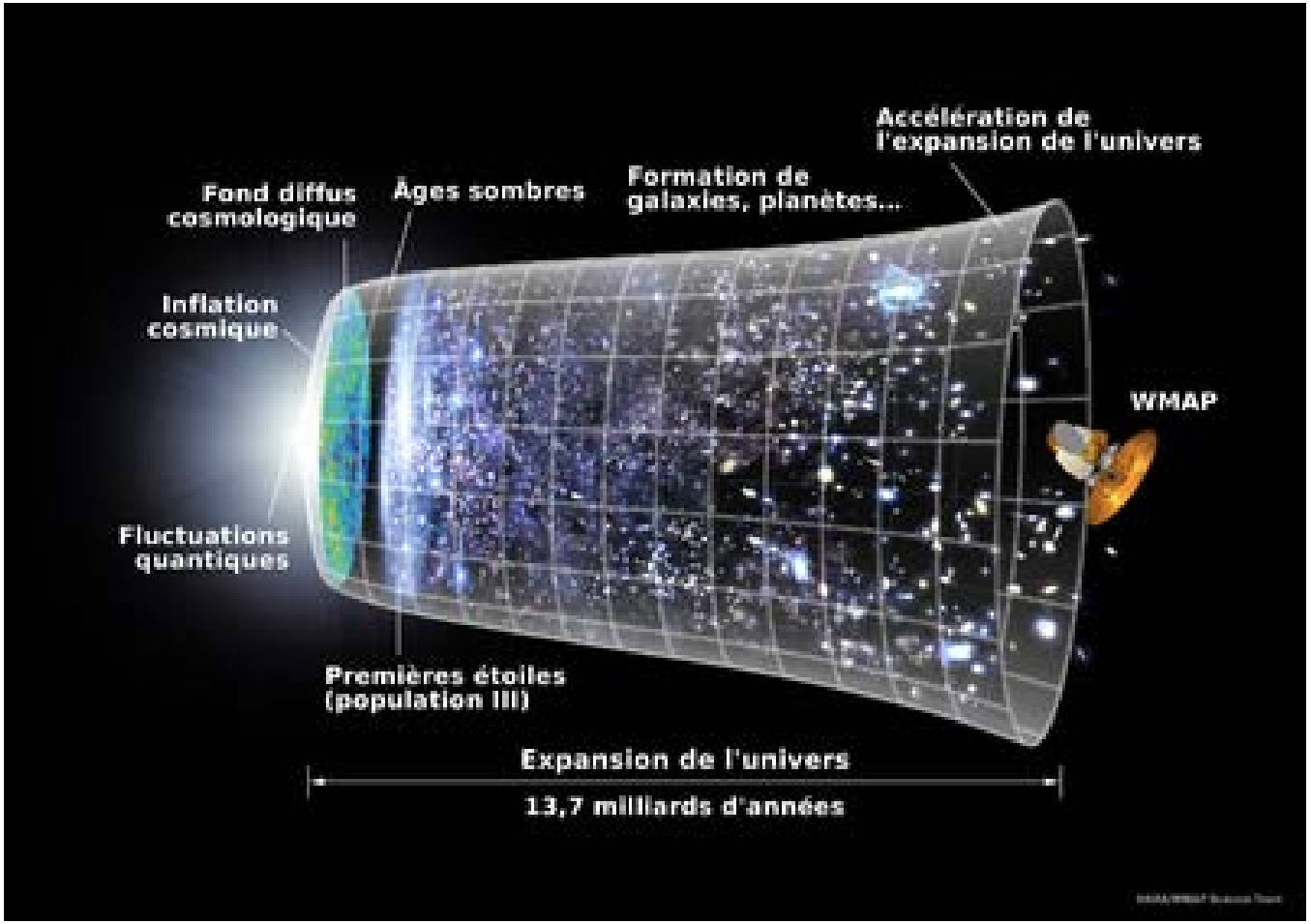
Date: 2011-04-27 07:01:18 CEST

Snapshot of a proton collision
directly from the ATLAS experiment

The **Supernova Cosmology Project** is one of two research teams that determined the likelihood of an accelerating universe and therefore a positive Cosmological constant. This discovery was named "Breakthrough of the Year for 1998" by Science Magazine[1] and, along with the High-z Supernova Search Team, the project team won the Gruber Prize in Cosmology in 2007.[2]

Project Members

Saul Perlmutter, Lawrence Berkeley National Laboratory
Gregory Aldering, Lawrence Berkeley National Laboratory
Brian J. Boyle, Australia Telescope National Facility
Patricia G. Castro, Instituto Superior Técnico, Lisbon
Warrick Couch, Swinburne University of Technology
Susana Deustua, American Astronomical Society
Richard Ellis, California Institute of Technology
Sebastien Fabbro, Instituto Superior Técnico, Lisbon
Alexei Filippenko, University of California, Berkeley
Andrew Fruchter, Space Telescope Science Institute
Gerson Goldhaber, Lawrence Berkeley National Laboratory
Ariel Goobar, University of Stockholm
Donald Groom, Lawrence Berkeley National Laboratory
Isobel Hook, University of Oxford
Mike Irwin, University of Cambridge
Alex Kim, Lawrence Berkeley National Laboratory
Matthew Kim
Robert Knop, Vanderbilt University
Julia C. Lee, Harvard University
Chris Lidman, European Southern Observatory
Richard McMahon, University of Cambridge
Thomas Matheson, NOAO Gemini Science Center
Heidi Newberg, Rensselaer Polytechnic Institute
Peter Nugent, Lawrence Berkeley National Laboratory
Nelson Nunes, University of Cambridge
Reynald Pain, CNRS-IN2P3, Paris
Nino Panagia, Space Telescope Science Institute
Carl Pennypacker, University of California, Berkeley
Robert Quimby, The University of Texas
Pilar Ruiz-Lapuente, University of Barcelona
Brad Schaefer, Louisiana State University
Nicholas Walton, University of Cambridge


Accélération de
l'expansion de l'univers
Fond diffus
cosmologique
Âges sombres
Formation de
galaxies, planètes...
Inflation
cosmique
WMAP
Fluctuations
quantiques
Premières étoiles
(population III)
Expansion de l'univers
13,7 milliards d'années

Le LPNHE au 21^{e} siècle…

Expansion accélérée?