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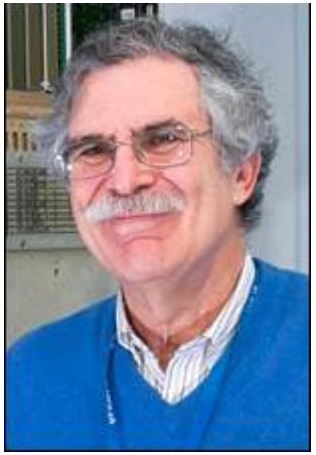
"Gordon Fest"
BNL: 2nd October 2017



Howard at CERN
Part 1: the 1980s

Norman McCubbin (Rutherford Appleton Lab)
With very valuable help and input from
Mike Albrow and Chris Fabjan

Howard at CERN: outline

- The Axial Field Spectrometer at the CERN Intersecting Storage Rings (ISR):
  - Origins and concept;
  - Uranium calorimetry;
  - A castle on the French riviera;
  - JETS
- HELIOS, leptons and heavy ions
- A view/advice from a retiree of several years' experience, if I may be so bold....

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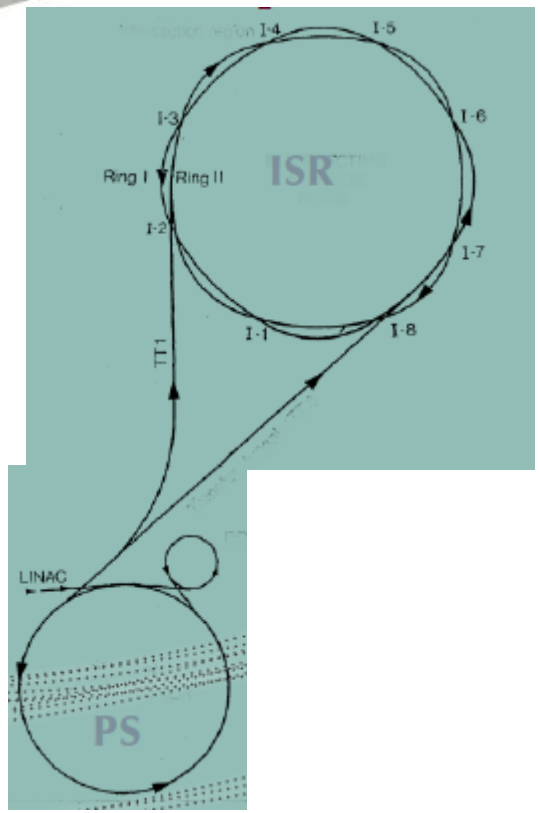
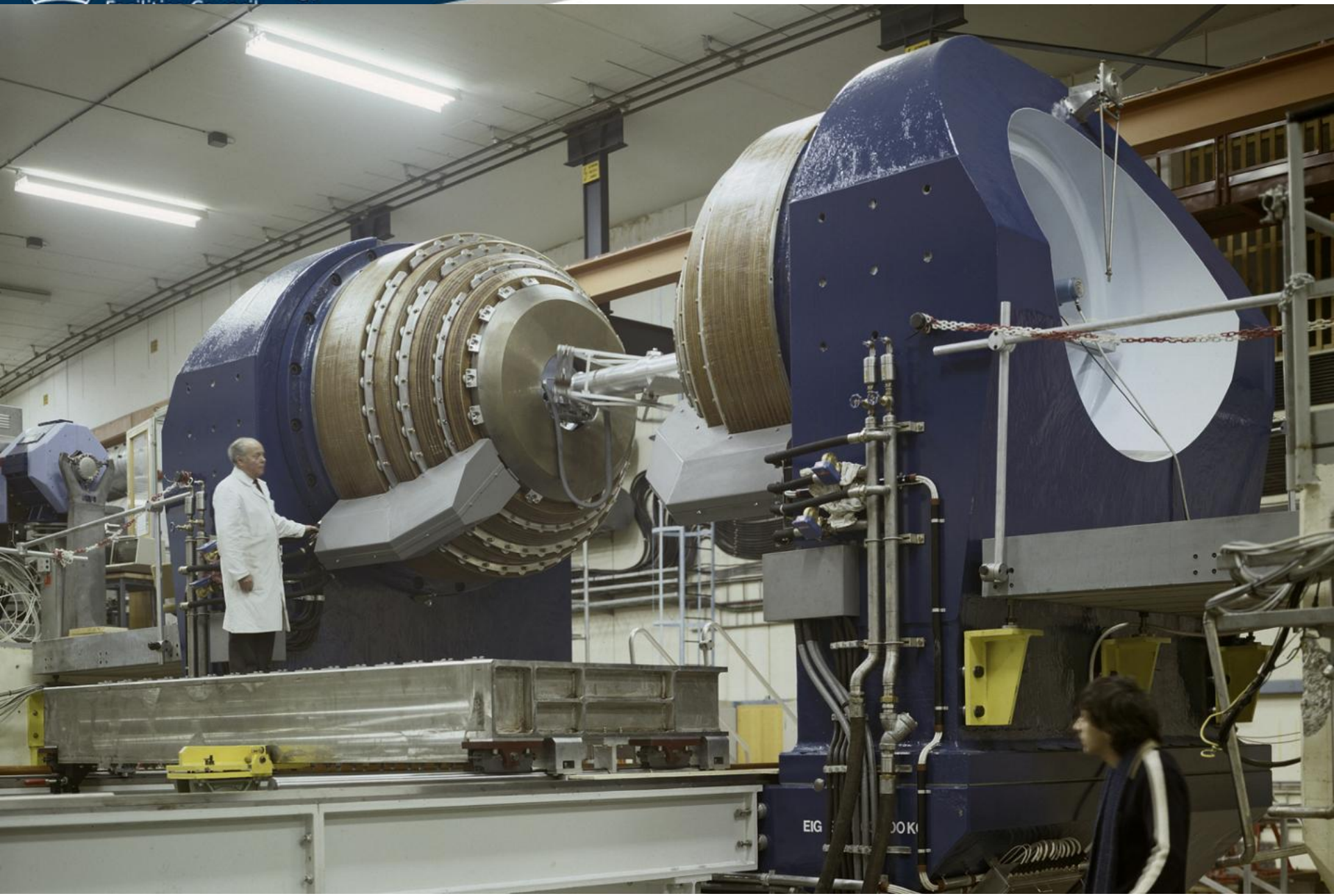
The CERN ISR (1971-1983)



Two counter-rotating rings.
√s=23, 31, 45, 63 GeV
Lumi up to a few10^{31}

AFS: origin and concepts

- ISR started operation in 1971.
- Initially equipped mainly with ‘key-hole’ spectrometers…
- …. as dictated by available detector technology and main physics interests.
- By 1976, single-particle high-pt spectra, the 1974 ‘November revolution’, the SPEAR Mk1 detector, jets in e+e-, Willis idea of ‘impactometer’ etc. were all pushing towards something more ambitious. High-pt jet production in hadronic collisions was widely anticipated, but not yet established conclusively.
- The Axial Field Spectrometer (AFS) was proposed to CERN in Jan 1977 by the CERN Willis group (leptons, photons,..) and the British-Scandinavian Collaboration (high-pt hadrons).
- It was based on an ‘open’ axial field magnet



Uranium calorimetry

- The open region was filled with a drift chamber (2π in azimuth) backed up by 2, then 3, finally 4 'walls' of U/Cu/Scint calorimeter.
- This was to be the first experiment-scale deployment of a (depleted) Uranium-based calorimeter, based on the pioneering studies of hadron calorimetry by the Willis group.
- The initial CERN, UK, Scandinavian collaboration was soon joined by US groups (BNL – enter Howard , Penn, Pittsburgh) and others (Athens, Cambridge, Tel Aviv.)
- The US participation was crucial to procuring (borrowing) the depleted U (from Oak Ridge), and for financial input.
- Around this time (1979) I recall meeting Howard...

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Uranium calorimetry

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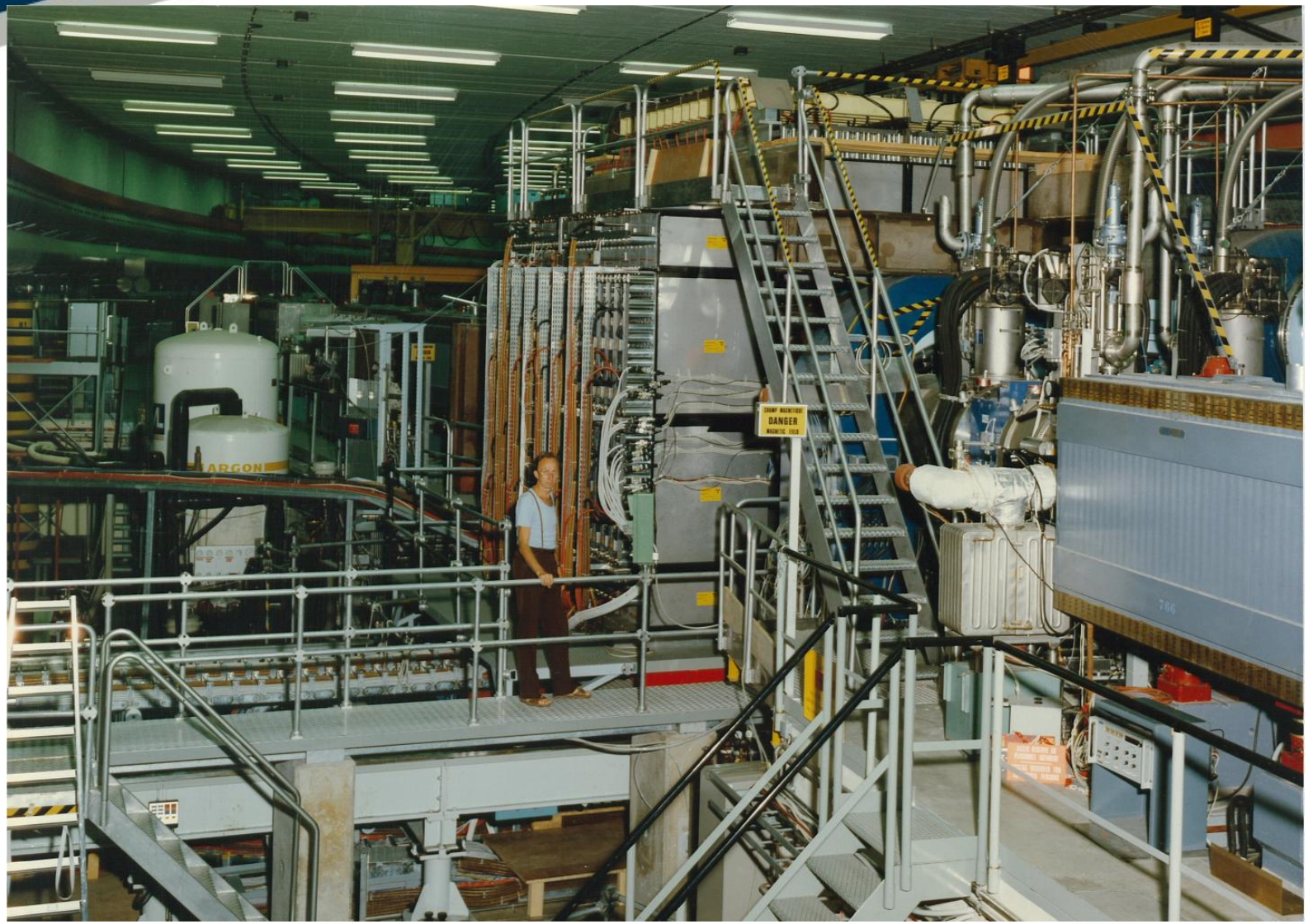
Uranium calorimetry



The Clews family and a castle on the French Riviera...

- Henry Clews (1836-1937) was an artist and sculptor from a wealthy family.
- Not appreciated in the USA, he moved to France, bought the ancient chateau at La Napoule (near Cannes) in 1918, rebuilt it, and used it as a home and museum for his art.
- In 1974 the Clews family offered the chateau to the University of Pennsylvania, the only conditions being that:
  - Some of the of works of Henry Clews should continue to be displayed;
  - Franco-American amity should be promoted.
- Happily, Penn was in the AFS collaboration, and so in 1981 we held our collaboration meeting there at the Chateau de La Napoule.

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La Napoule 1981

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La Napoule 1981

La Napoule 1981

Craig Woody

Bill Molzon

Tom Ludlam

Torsten Akesson

Sherman Frankel

Mike Albrow

Howard

JETS (at last)

- We reported clear evidence for hadronic jets at high pt at the Paris Conference in 1982, at the same time as UA2 and UA1.
- With all 4 walls in place, and data taken over a range of sqrt(s) values, we published (1983) the text-book plot:

- We pt at the A2 and
- Wit e of sqr ot:

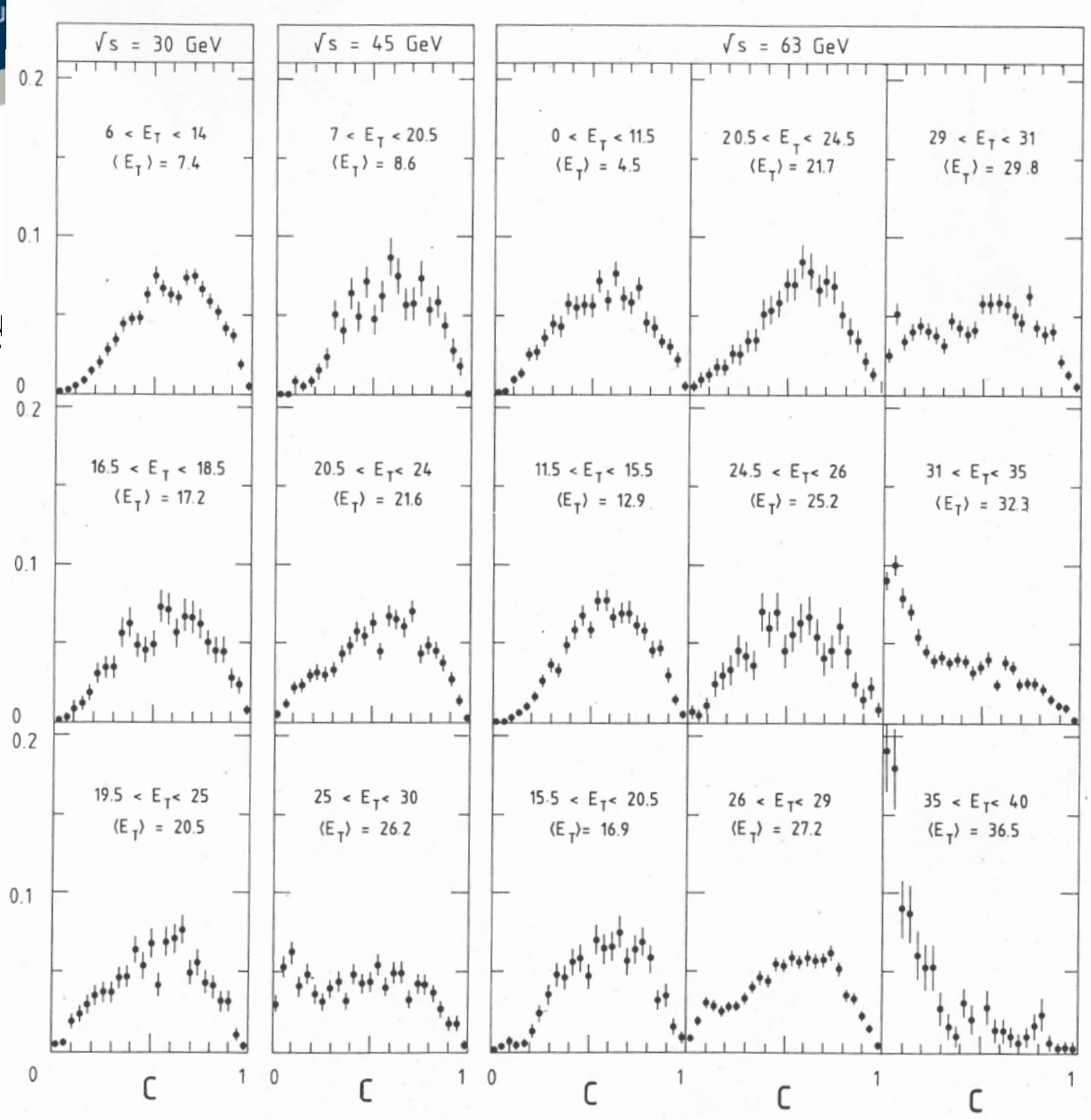

Fig. 3. Circularity distributions for bins in E_T and $\sqrt{s}$; error bars are statistical only.

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983

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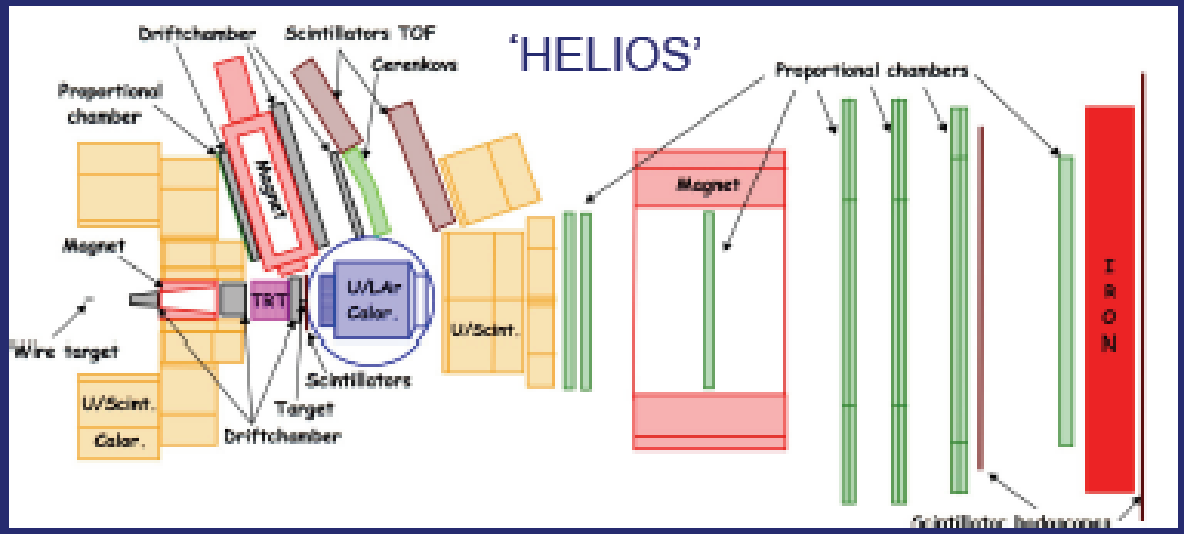
From ISR to SPS: leptons and ions

NA34-1
(1984)
N.McCubbin

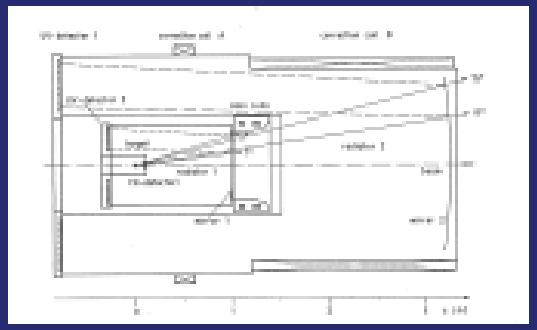
pBe collisions
e^+e^-, $\mu^+\mu^-$,
$e\mu$, γ



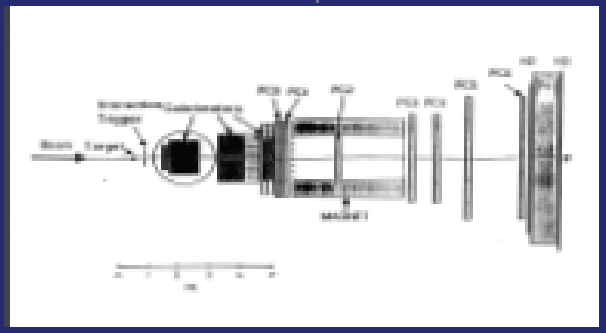
NA34-2
(1984)
H.J.Specht

AA collisions
no $\mu^+\mu^-$, γ
hadrons

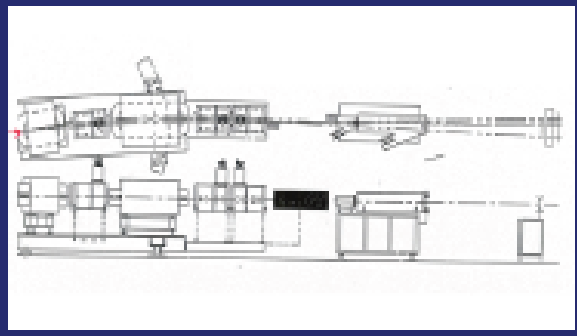
2 years after the first O beam 1986



NA45 (1989), e^+e^-
H.J.Specht



NA34-3 (1989), $\mu^+\mu^-$
G.London

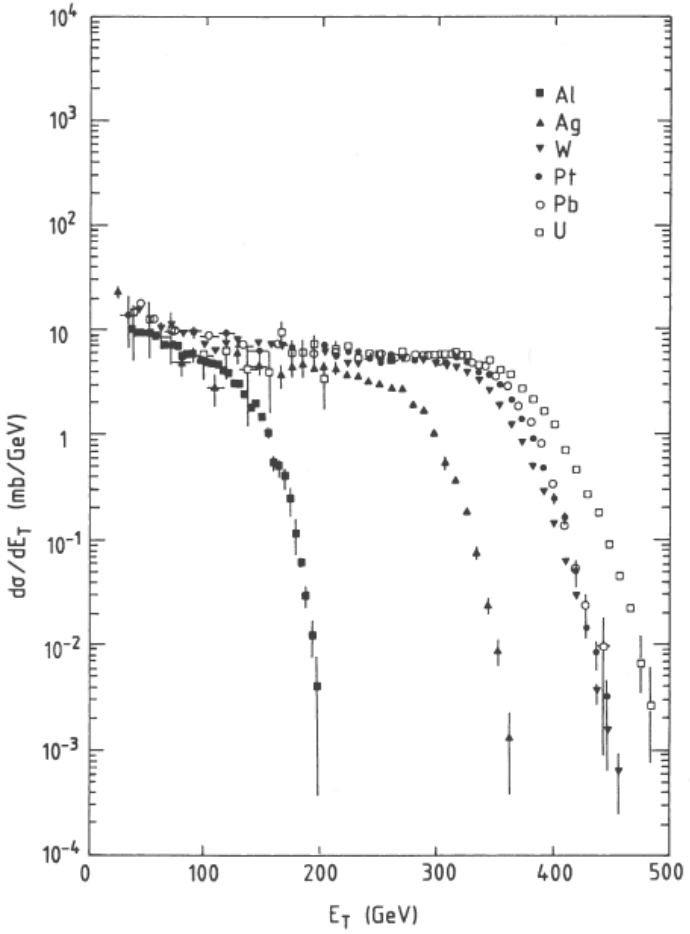


NA44 (1989), hadrons
H.Bøggild

1986: first Heavy Ions at CERN

200 GeV/n S^{32} HELIOS

First view of what is now a 'standard' plot...



Advice to a new retiree...

- Welcome!
- You will have more time for family, friends and ... messing around on boats.
- You will no longer have to deal with emails of which the following is a genuine, generic example..
- You will have time to go to retirements ‘fests’ of friends and colleagues.

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Advice to a new retiree...

- W
- Yo ssing ar
- Yo he fo
- Yo ds ar

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From: [redacted]
Sent: Sun [redacted] 10:25
To: McCubbin, NA (Norman)
Cc: [redacted]
Subject: Recruitment in PPD

Dear Norman

There have been a number of discussions over the last few weeks [redacted]

There is still work to do in understanding in detail what the outcome will be but it is abundantly clear that the situation is not good. In particular the situation will be very difficult for PPD. In addition to losing whole posts there will be pressure to fund less than 100% of many staff. [redacted]

[redacted] the only sensible course of action is for me to impose a complete moratorium on all recruitment into PPD until [redacted] I am very sorry to have to take this action but [redacted]

Naturally I would be happy to sit down with you to discuss the situation [redacted]

[redacted]

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“Hold the bannister!”

From all your ISR friends: a long, happy, healthy and productive retirement.