UK heavy flavour 2017

Keith Ellis
IPPP

IPPP-supported flavour physics conferences

- 2013,2017 UK flavour Durham
- 2014 LHCbUK meeting Durham
- 2014 YETI Flavour Physics
- 2013 Charm Manchester
- 2013 UK HEP forum
- 2014 BEACH Birmingham
- 2014 Beauty Edinburgh
- 2014 Rare Decays ICL
- 2016 Kaon Birmingham
- 2016 Heavy Flavor Quo vadis? Ardbeg
- 2017 D-mixing Peak District
- 2017 Higgs-Maxwell meeting B-quark at 40

Senior Experimental Fellowships and Associatseships

- 2013-14 Egede
- 2015-16, Muheim
- 2012-13 Gersabeck, Parkes
- 2013-14 Borissov
- 2015-16 Lazzeroni
- 2015-16 Wingate
- 2015-17 Jaeger
- 2016-17 Gersabeck
- 2016-17 Cowan

IPPP is inviting applications for a new round of **IPPP Associateships:**

http://www.ippp.dur.ac.uk/ippp-associateships

Open to members of permanent academic staff in UK PP

Duration 1 year, start date October 2017.

Application closing date: 31st August 2017

Value up to £3,000

New round of **Senior Experimental Fellowships** at IPPP:

http://www.ippp.dur.ac.uk/senior-experimental-fellowships

To be awarded to small teams led by senior UK PP experimentalists.

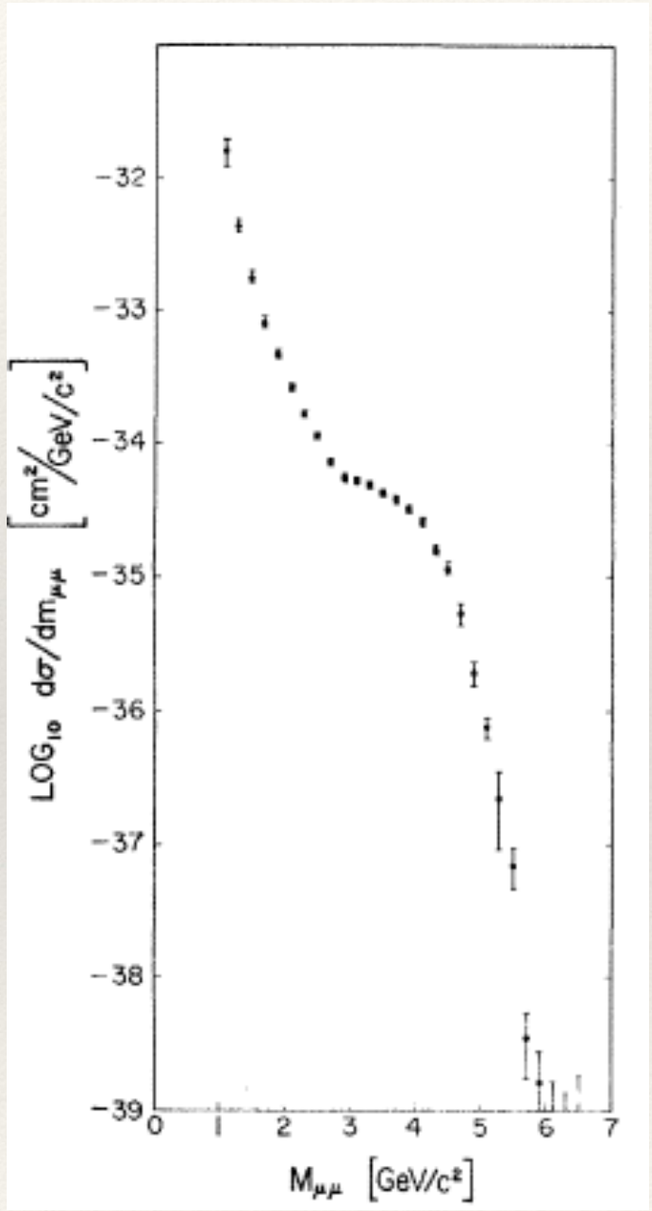
Duration 1 year, start date 1 January 2018

Application closing date: 31st August 2017

Value up to £10,000

Prehistory

- Lederman et al, PRL 25 1523 were the first to measure massive muon pairs coming from the collision of hadrons, following a suggestion of Lederman and Yamaguchi.
- They were interested in measuring this to normalise the cross section for W production.
- This discovery came to be known as “Drell-Yan” process, (quite unfairly)
- The experiment had low mass resolution on the mass of the muon pairs, (~15% in the appropriate mass range).
- In 1974 it was discovered (at SLAC and at Brookhaven) that the reason for the shoulder, was the J/psi observed at low mass resolution.
- Leon had missed a major discovery.



Oops-Leon

- Anxious not to miss another discovery the Lederman group mounted another experiment, this time at Fermilab observing electron-positron pairs, with better mass resolution (σ=70MeV)

OBSERVATION OF HIGH MASS DILEPTON PAIRS

IN HADRON COLLISIONS AT 400 GeV

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and

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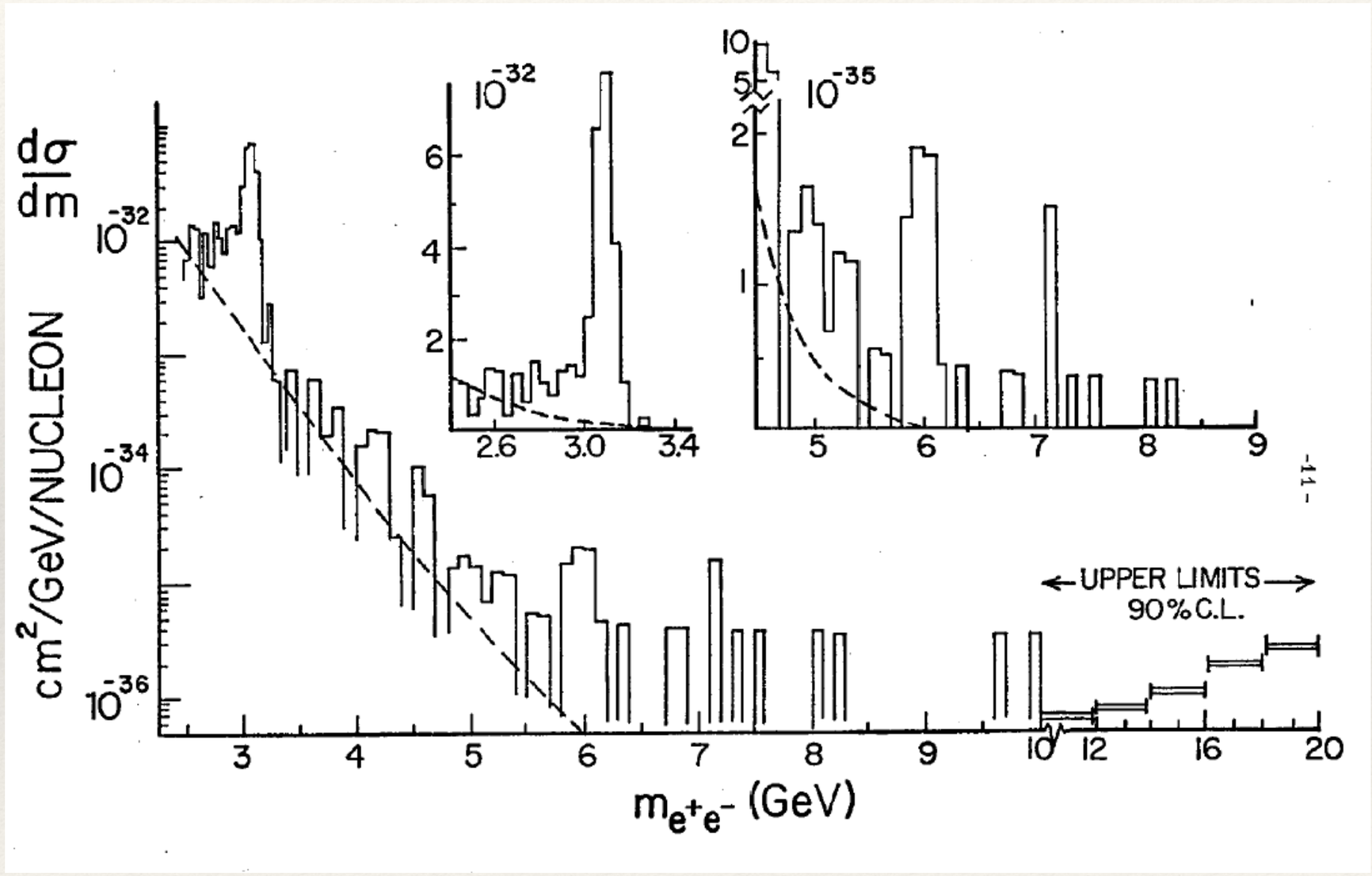
ABSTRACT

We report preliminary results on the production of electron-positron pairs in the mass range 2.5 to 20 GeV in 400 GeV p-Be interactions.

Twenty-seven high mass events are observed in the mass range 5.5-10.0 GeV corresponding to $\sigma = (1.2 \pm .5) \times 10^{-35}$ cm^2 per nucleon. Clustering of 11 of these events between 5.8 and 6.1 GeV suggests that the data contains at least one new resonance at 5.97 GeV.

Oops-Leon

- After the bump at 5.8 to 6.1 GeV went away with higher statistics, this state known as the Upsilon, became the Oops-Leon.



The discovery of the Upsilon

Observation of a Dimuon Resonance at 9.5 GeV in 400-GeV Proton-Nucleus Collisions

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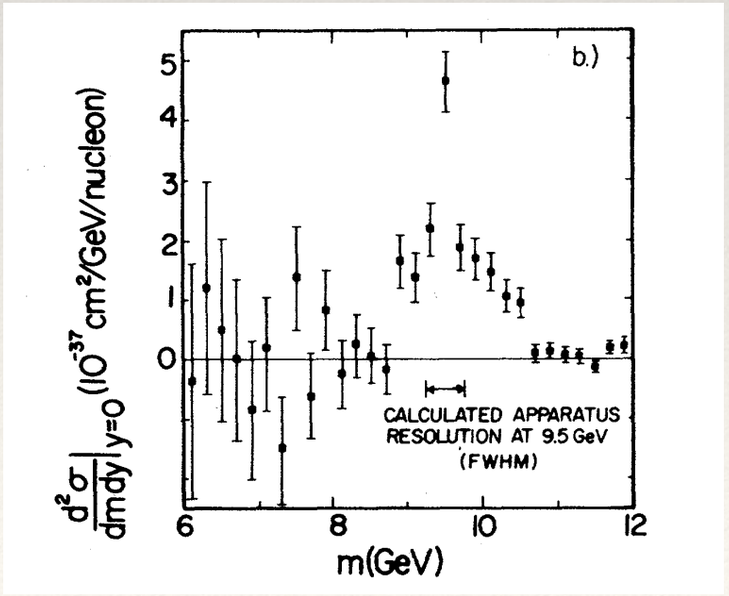
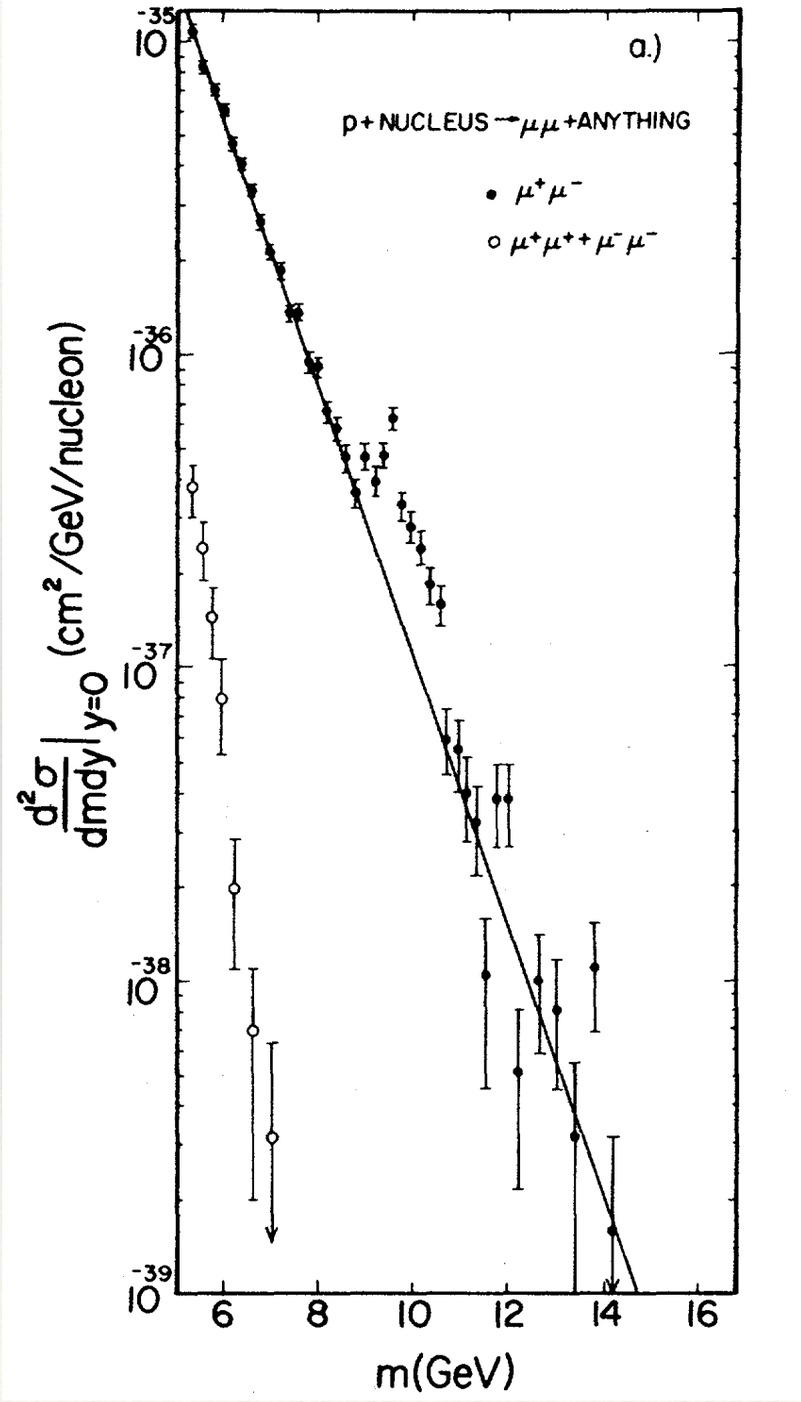
State University of New York at Stony Brook, Stony Brook, New York 11974
(Received 1 July 1977)

- Subsequently in 1977 the true Upsilon was discovered at 9.5 GeV.





Happy birthday b-quark

- The subsequent discovery of b-hadrons held other surprises for the field, notably the long-lifetime of the b-hadrons, allowing successful tagging of b-hadrons using vertex-detectors.
- What is remarkable is that 40 years later we are initiating a new program to study the b-quark in even greater detail at BelleII as well as the continuing program of LHCb, including now the projected phase II.
- I give my best wishes for a successful workshop.