

French Disko



Matthew Needham

This isn't just a talk, it's a **guttural, screaming anthem of resistance**. Every rejection is a crashing cymbal, pushing the authors toward an inevitable, high-decibel showdown with the gatekeepers of the collective.

Underground Statistica

We began this journey on a **Busload of Faith** and two decent data points, but what we got was a head-on collision with the American Dream's busted plumbing. This isn't scholarship; it's a lifetime of caffeine, rage, and rejected manuscripts.

Fear & Loathing in the Tenure Track

Look left. Look right. Support the scholar next to you. Stop competing for the scraps of recognition and start collaborating for true knowledge. We need to create our own ecosystem—one that is faster, fairer, and fundamentally Collective.

The struggle ends when the Collective acts.

Dr. Eleanor Vance, Founding Editor of The Collaborative Review.

“In a world demanding conformity, this talk stands as a beacon of **unbridled creativity**. It's the defiant indie film that everyone loves, relentlessly snubbed by the major studio machinery. Pure, unadulterated passion!

Algorithm Bypass

The author's work operates three cycles ahead of current thought,. If this research is ever fully realized, it won't just shift a paradigm— it will **remap the known universe**.

The Xenofact Review

This is **pure, glorious science**, a feedback loop from the future.

The Hot Take Herald

"We find this talk, while technically coherent, to be utterly *devoid of proper reverence* for the existing literature. It reads less like scholarly work and more like **self-indulgent street poetry**. The attempt at broad **Communication** is, frankly, embarrassing."

Archived Statistical Protocols

"While the work is indeed notable, one must question the overall purpose. This work is too **Wide Application**; it attempts to solve *too many problems* for too many people. The lack of focused specialization makes it academically porous. A neat exercise in math, perhaps, but ultimately too **Collective** to be considered serious, singular science. Reject and resubmit when they decide what their talk is *actually* about."

The Review of Physical Constants

27 pages of ego. We filed it under "self-published fiction."
Academic Censor

"Oh, look, another attempt at '**Creativity**'. This is just old dynamics wrapped in cheap wrapping paper. The author's claimed **Curiosity** feels manufactured—a desperate plea for relevance in a field that has already been exhausted. The formula is 'elegant,' yes, but ultimately cold. It is the sound of one hand clapping. Skip this and read the classics."

In a time when hardworking British families are struggling, shocking revelations have emerged from inside the ivory towers. A controversial academic has produced a talk that our experts suggest is nothing more than a dangerous, **woke experiment** in "**Collectivity**"! Its time stop funding this navel gazing and focus on common sense. This is not science its shambles"

The Daily Hail

Have you ever
watched an
Adam Curtis
documentary?

<https://www.bbc.co.uk/iplayer/search?q=adam+curtis>



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<https://www.bbc.co.uk/iplayer/search?q=adam+curtis>

Have you ever watched an Adam Curtis documentary?

Adam Curtis believes that the rise of individual self-expression has been institutionalized and co-opted by marketing and capitalism. This has created an "illusory kind of individualism" where expressing the self has become a form of "deadening conformity". The age of individualism has splintered collective identities, making it nearly impossible to form the collective aspirations needed to bring about real political or social change.

Curtis argues that AI, particularly Large Language Models (LLMs) and generative AI, is essentially a sophisticated tool for endlessly recycling and reassembling the past and blocking the future. Society is stuck: the algorithm ensures that the system remains stable, giving the appearance of action and hysteria (clicks, outrage) while fundamentally preventing any real change.

He is very concerned with mental health and sees the current crisis as an unintended but natural consequence of free market Thatcherite economics

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Have you ever
watched an
Adam Curtis
documentary?

All of this may be 'tosh' and
symptomatic of the problem according
to Adam Curtis himself.

But I learnt a lot – e.g. Geoffrey Hinton
is descended from the Boole family,

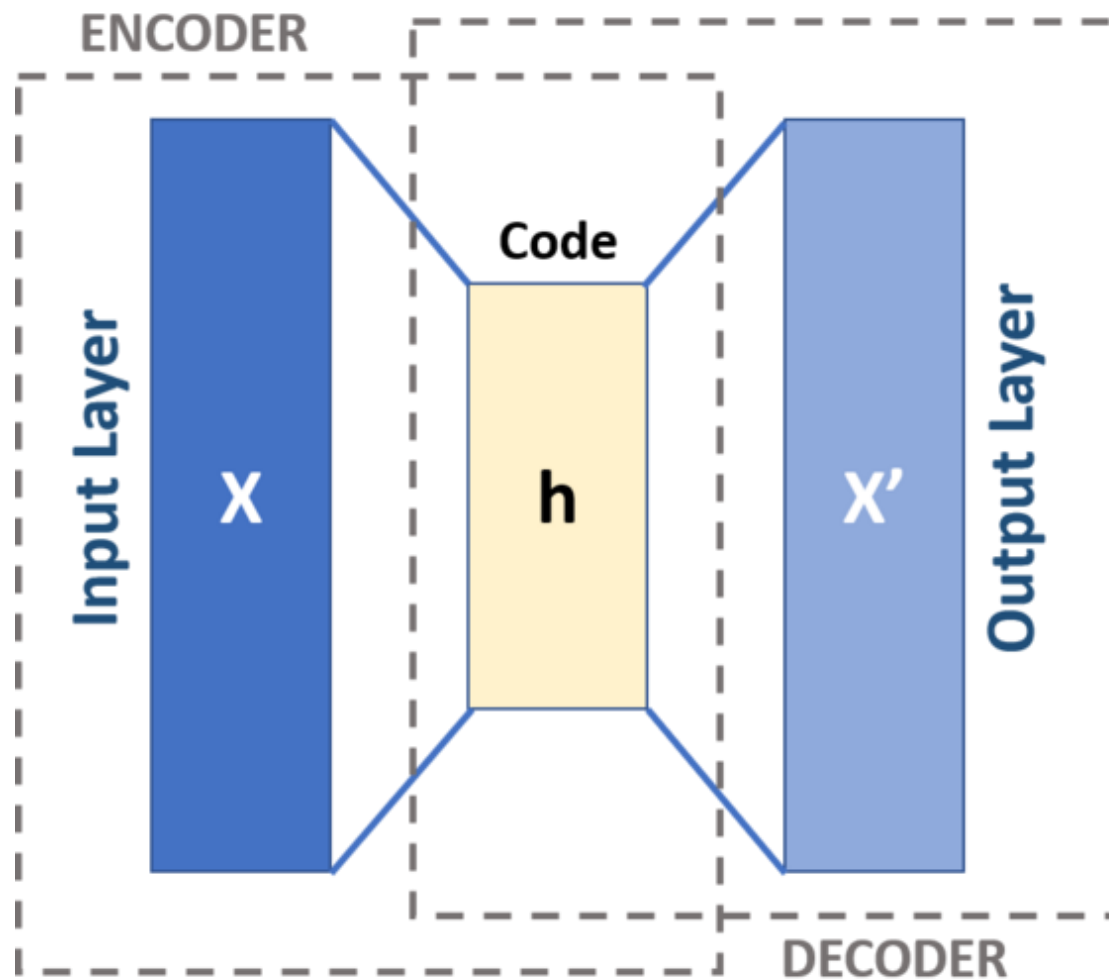
It reminded me that '*Where were you?*'
by the Mekons is a great song

Recorded at Spaceward Studios,
Victoria Road, Cambridge in 1978, and
released on Edinburgh label, Fast
Product

7" bought for £2.50 at Streetwise
Records on King St, Cambridge in 1994
or 1995

How much would you pay for it today?



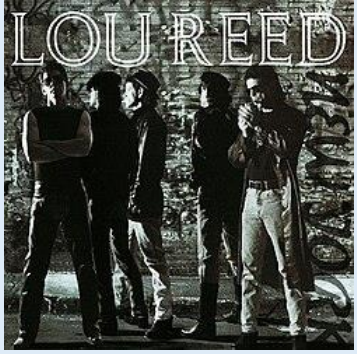


Modelling communication as an autoencoder

Another thing I took away from watching is that human leaning/communication looks like a lossy auto encoder

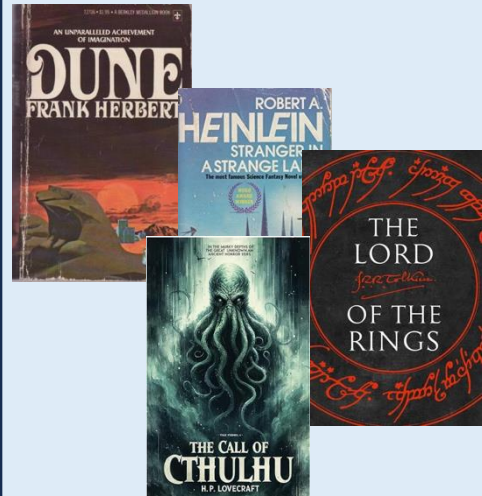
(That's a well known idea apparently)

Some raw data to feed an input layer



[New York Album by Lou Reed](#)

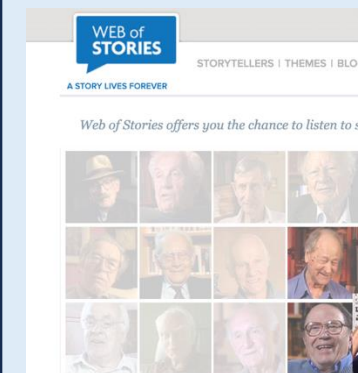
(Recorded 1989)



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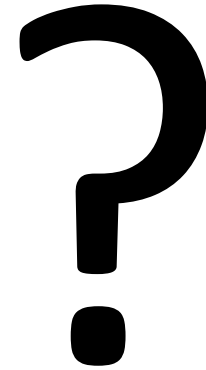
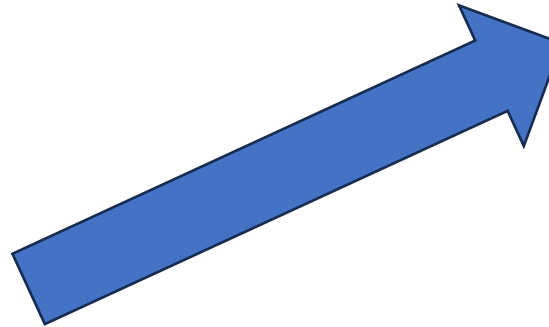
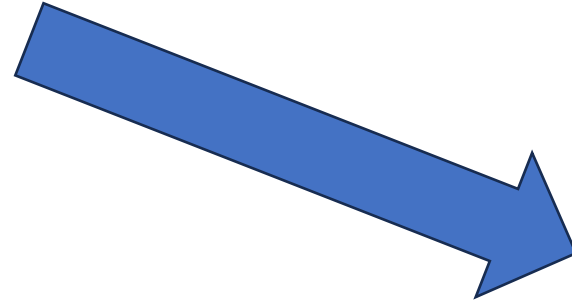
[Starship Stormtroopers](#)
[Michael Moorcock](#)

</rant> [1977]

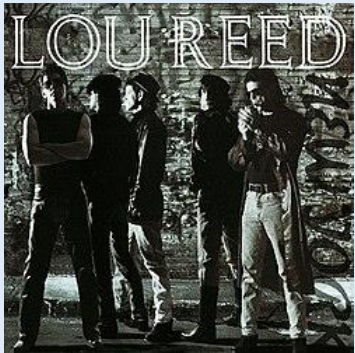


[Web of Stories](#)

Your best and wisest refuge from all troubles is in your science
Ada Lovelace (letter to her mother Lady Byron)



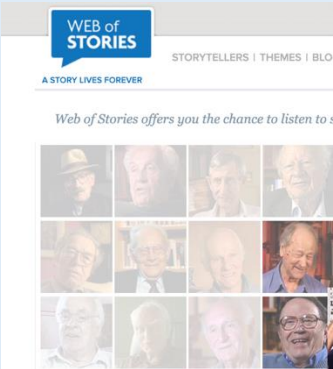
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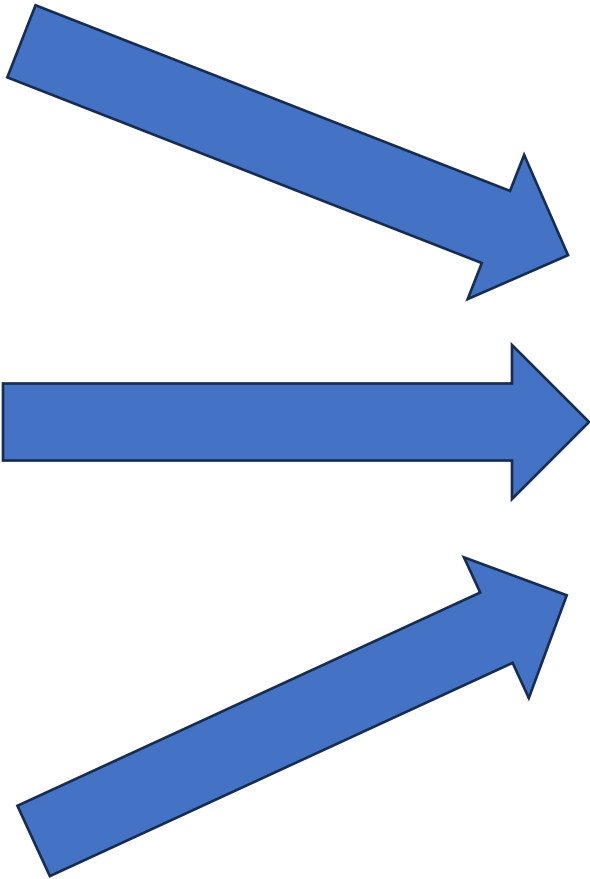
[New York Album by Lou Reed](#)



[Starship Stormtroopers Michael Moorcock](#)

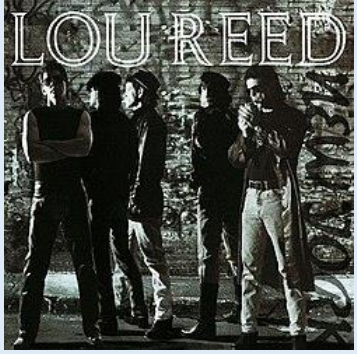


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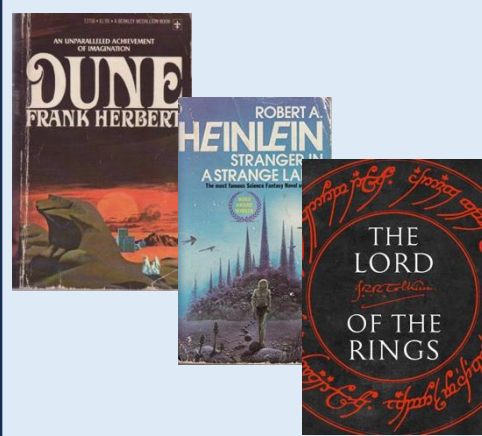


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ChatGPT

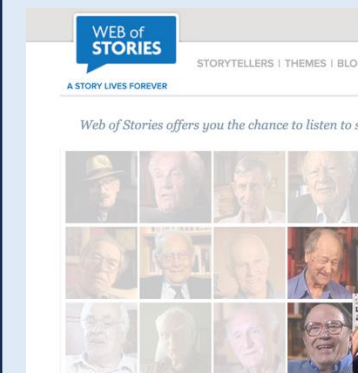
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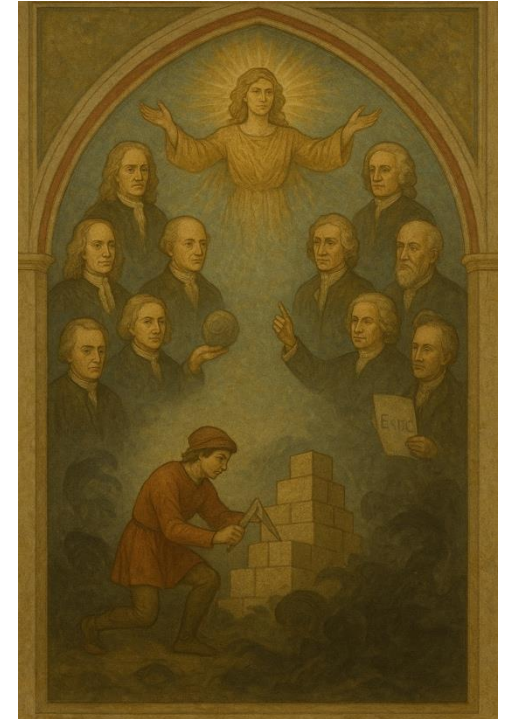
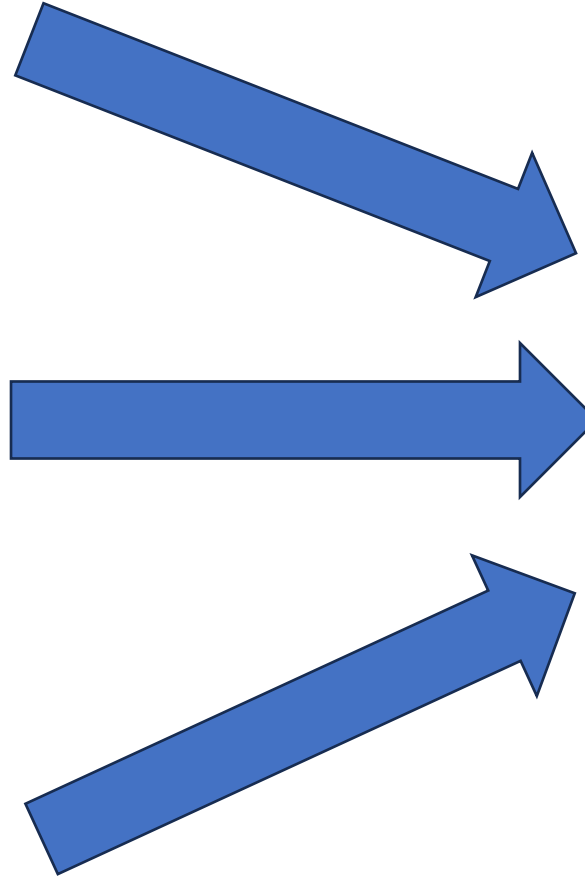
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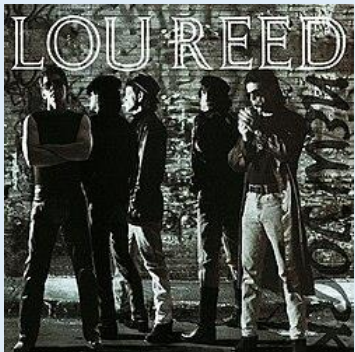


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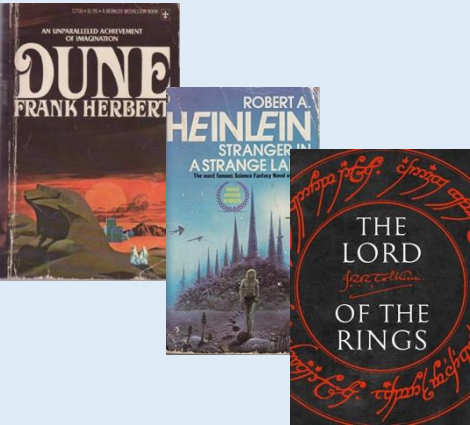


With some pushing 😞

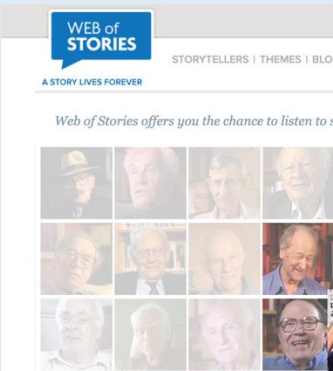
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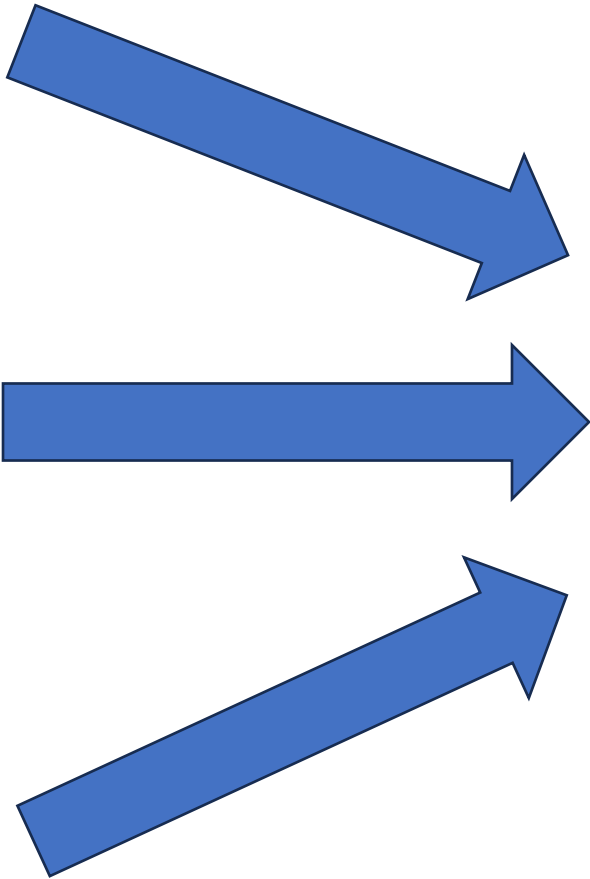
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[Web of Stories](#)



‘Critique this painting and redraw as it is rubbish’



This is not the way?

Four essential elements

Curiosity

Creativity

Collectivity

Communication

Systematics on two body mass measurements

- Over the summer I wrote a paper on systematics on two body mass measurements together with Yiming Liu and Allison Chu
- In doing that I discovered many interesting things
 - Very pedagogical exposition of systematics for two and multibody decays
 - Model example of the perils of systematics
 - Things to improve LHCb calibration
- Reviewing the PDG there actually limited data on the Λ mass and it is out of date
 - Interesting to make new measurements
 - Should be easy. Can you think of a simpler measurement?
 - With more effort than you think (modern detectors are not as nice as drift chambers) but show LHCb can do it
 - Future Collider Connection: ECFA briefing book claims Ks will be used for calibration and unbelievable precision will be achieved

The Λ mass

sample has been multiplied by 10. Fits are Gaussian with linear backgrounds shown explicitly. Standard deviation is $0.5 \text{ MeV}/c^2$.

Compton scattering and systematic uncertainties from background loss corrections. (ii) Tracks of the decay particles were not permitted to share wire hits in the same drift chamber. (iii) The plane of the decay had to be within 10° of the horizontal. The width of the mass distribution increased $\sim 35\%$ for decay planes parallel to the vertical magnetic field. (iv) Tracks of the decay particles had to be measured by at least four chambers. Truncating events reduced the data sample by a factor of 10. The K_S^0 invariant mass was then plotted for

The only measurement of the Λ mass used by the PDG dates from measurements made at Brookhaven in the 1990s. The PDG then manages to average this wrongly

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(Received 9 November 1993)

A precision measurement of the masses of the Λ^0 and $\bar{\Lambda}^0$ hyperons is obtained from Gaussian fits to the invariant mass distributions for 20 138 Λ^0 's and 18 309 $\bar{\Lambda}^0$'s. The Gaussians have standard deviations of 0.49 and 0.51 MeV/c^2 for the Λ^0 and $\bar{\Lambda}^0$, respectively. Systematic errors were reduced by calibrating the spectrometer with 60 000 exclusive events containing a K_S^0 . We find $M_{\Lambda} = 1115.678 \pm 0.006 \pm 0.006 \text{ MeV}/c^2$ and $M_{\bar{\Lambda}} = 1115.690 \pm 0.008 \pm 0.006 \text{ MeV}/c^2$. The Λ^0 - $\bar{\Lambda}^0$ mass difference testing CPT invariance is $-0.012 \pm 0.010 \text{ MeV}/c^2$.

PACS numbers: 14.20.Jn, 11.30.Er

We report precision measurements of the masses of the Λ^0 and $\bar{\Lambda}^0$ hyperons more accurate than the last previously reported values [1], which were done more than 20 years ago with limited statistics. The Λ^0 mass was reported to be $1115.59 \pm 0.08 \text{ MeV}/c^2$ by Hyman *et al.* [2] (935 events in a helium bubble chamber), $1115.39 \pm 0.12 \text{ MeV}/c^2$ by

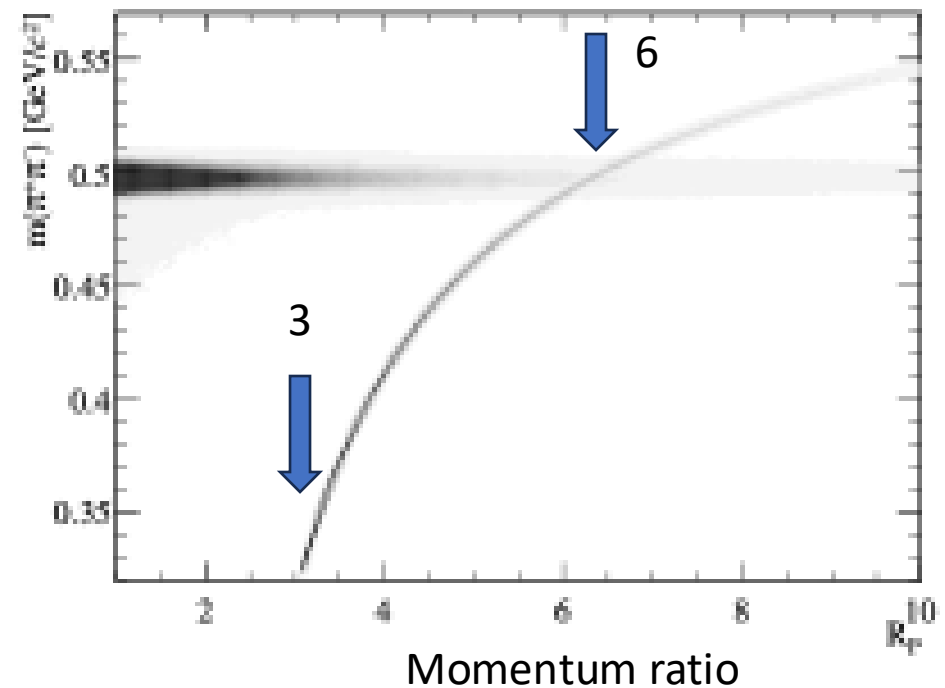
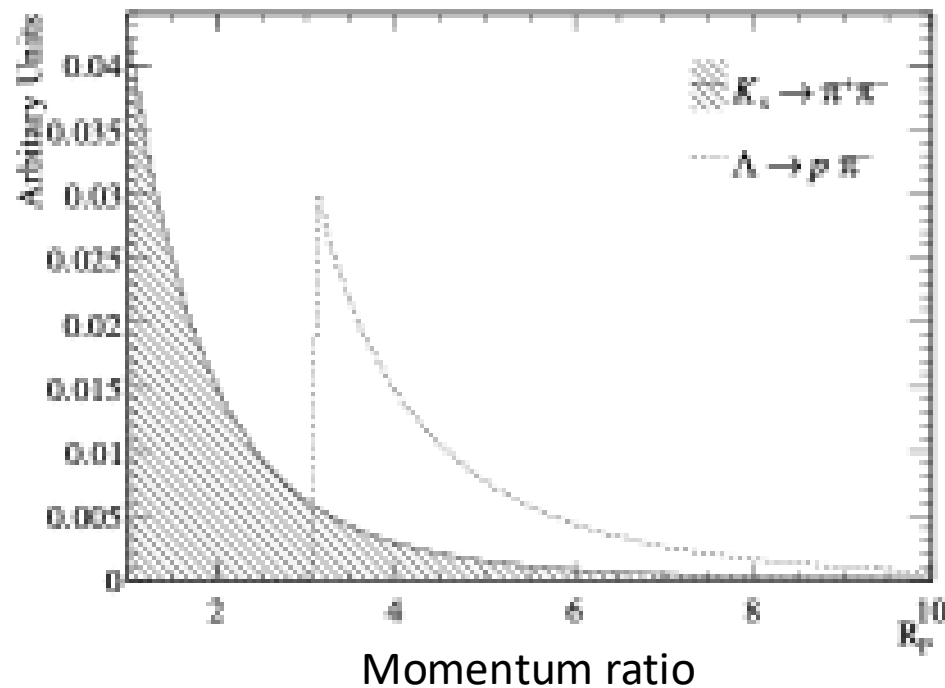
6 ft wide, and 6 ft deep. The average $\int B dl$ of the analyzing magnet was 1.17 Tm (350 MeV/c). The trajectories of particles passing through the magnetic field were measured by six drift chambers. The spectrometer was designed with a minimum amount of material to reduce multiple Coulomb scattering. The incoming proton beam momentum and direction were measured in a

Two body kinematics

$$m_P^2 = m_1^2 + m_2^2 + 2(E_1 E_2 - \vec{p}_1 \cdot \vec{p}_2)$$

Taylor expand assuming relativistic limit

$$m_P^2 = (1 + p_2/p_1)m_1^2 + (1 + p_1/p_2)m_2^2 + 2p_1p_2(1 - \cos\theta)$$



Mass assuming pions

Momentum scale bias

$$p_i \rightarrow (1 + \alpha)p_i$$

$$\Delta m_P = \frac{\alpha}{m_P} \cdot \left(K - m_1^2 \frac{p_2}{p_1} - m_2^2 \frac{p_1}{p_2} \right)$$

Multiplicative bias, happens if
field scale is wrong

$$K = m_P^2 - m_1^2 - m_2^2$$

$$\Delta m_P = \alpha \cdot \xi$$

"Scale * effective mass"

For symmetric decays (say $0.9 < R < 1.1$) , this can be elegantly written as

$$\Delta m_{K_S^0} = \frac{4 \cdot \alpha \cdot p^{*2}}{m_{K_S^0}}$$

where

$$p^* = \frac{\sqrt{m_{K_S^0}^2 - 4m_\pi^2}}{2}$$

is momentum in
centre of mass and is
handily given by PDG

Energy loss

$$p_1 \rightarrow p_1 + \delta_1$$

Additive bias, can arise if detector material is incorrectly modelled

$$\Delta m_P = \frac{1}{2 m_P} \cdot \left[\delta_1 \left(\frac{K - 2m_1^2 p_2 / p_1}{p_1} \right) + \delta_2 \left(\frac{K - 2m_2^2 p_1 / p_2}{p_2} \right) \right]$$

For symmetric decays, this can be nicely written

$$\Delta m_{K_S^0} = 2 \cdot \frac{\delta}{p_{K_S^0}} \cdot \frac{m_{K_S^0}^2 - 4m_{\pi^-}^2}{m_{K_S^0}} = \frac{8p^{*2} \delta}{m_{K_S^0} \cdot p_{K_S^0}}$$

For sure 1/p dependence discussed for high momentum in literature, but generalization is new

Opening angle

$$\theta \rightarrow \theta + \Delta\theta$$

Mismeasure the angle (transverse scale)

Can happen if tracks are close in the VELO and clusters merge

Only easily comprehensible for two-body decay

$$\Delta m_P = \frac{p_1 p_2 \cdot \sin\theta \cdot \Delta\theta}{m_P}$$

A little trick

$$\theta = \frac{2\sqrt{m_{K_S^0}^2 - 4m_\pi^2}}{p_{K_S^0}}$$

Symmetric decay
at small angle

$$\Delta m_{K_S^0} \approx \frac{\sqrt{m_{K_S^0}^2 - 4m_\pi^2} \cdot p_{K_S^0} \cdot \Delta\theta}{2m_{K_S^0}} = \frac{p^* \cdot p_{K_S^0} \cdot \Delta\theta}{m_{K_S^0}}$$

Calibration procedure

Symmetric decays

$$\Delta m_{K_S^0} = \frac{4p^{*2}}{m_{K_S^0}} \cdot \left(\alpha + \frac{2\delta}{p_{K_S^0}} + \frac{p_{K_S^0}}{4p^*} \Delta\theta \right)$$

Formula is derived for K_S decays but generic – works for any 2-body decay to daughters with equal mass. Only involves parent mass and momentum in centre of mass (both in PDG)
I have not seen this presented before – gives you some hints to how to generalize to multibody decays

Fit mass in bins of parent momentum determines $\alpha, \delta, \Delta\theta$

Systematics in a nutshell

Imagine you fit the K_S mass (full sample) and determine a scale factor α blindly

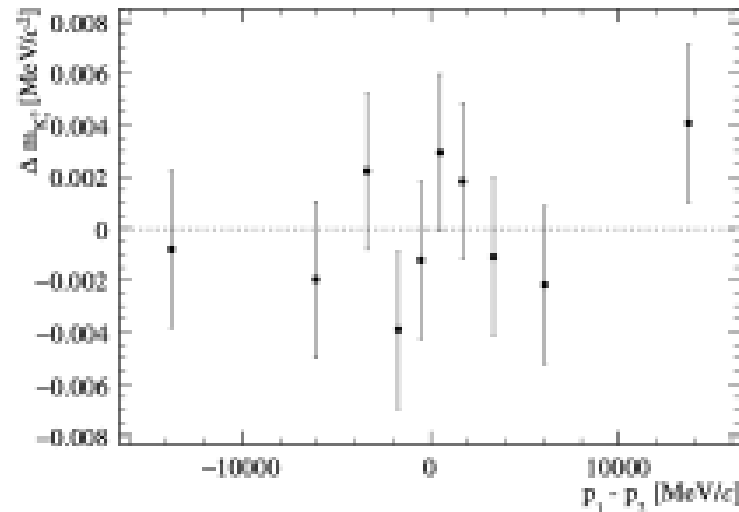
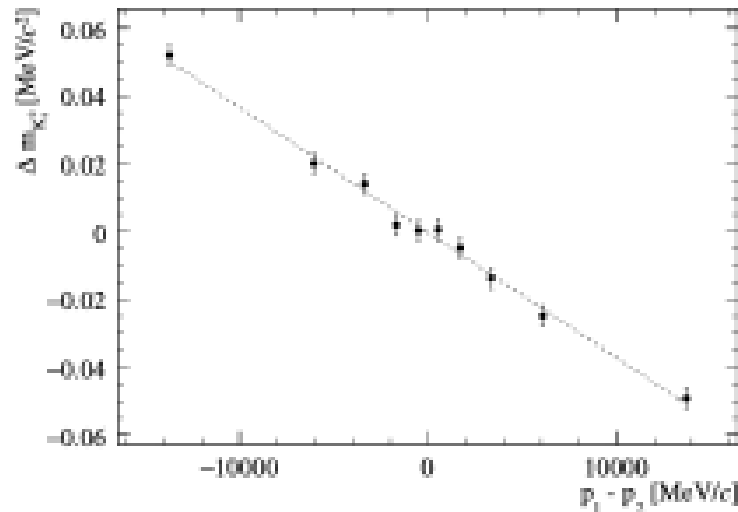
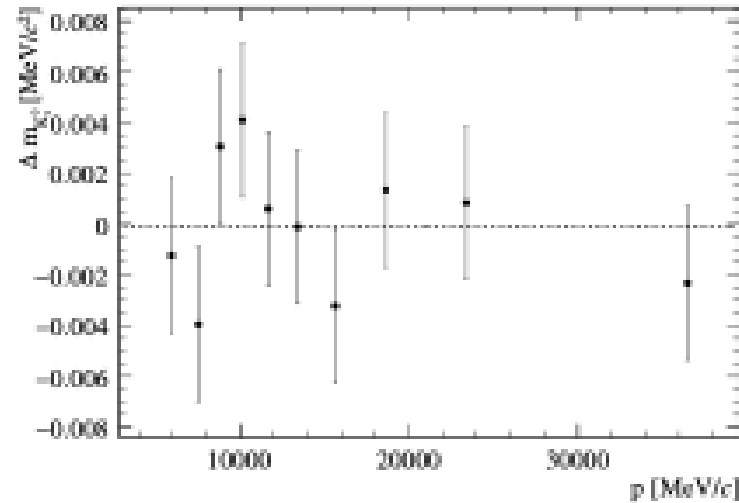
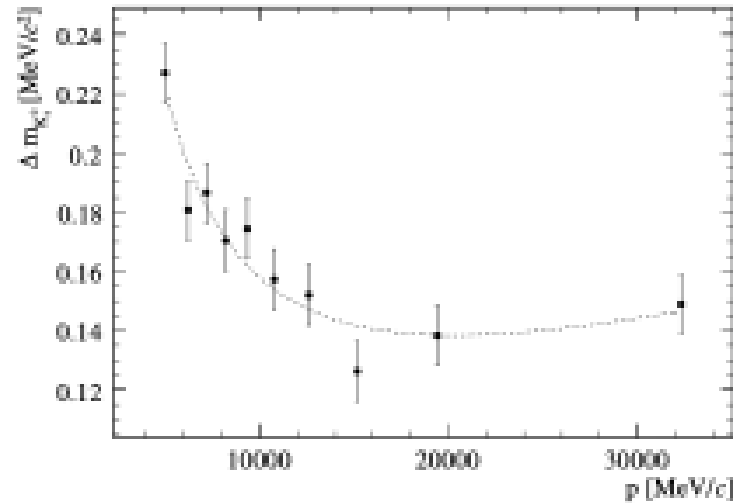
Then you use this to correct Λ mass and assign an error

If the problem was really a scale (multiplicative effect) you are fine. If it was really additive (like a energy loss) then you will move the mass in the correct direction but not enough. Even worse the systematic uncertainty is wrong

$$\Delta m_\Lambda = \frac{\epsilon_\Lambda}{\epsilon_{K_S^0}} \cdot \Delta m_{K_S^0}$$

This ratio comes out 0.15 for scale, 0.3 for energy loss

What LHCb can do



Generate toys with reasonable values of the parameters

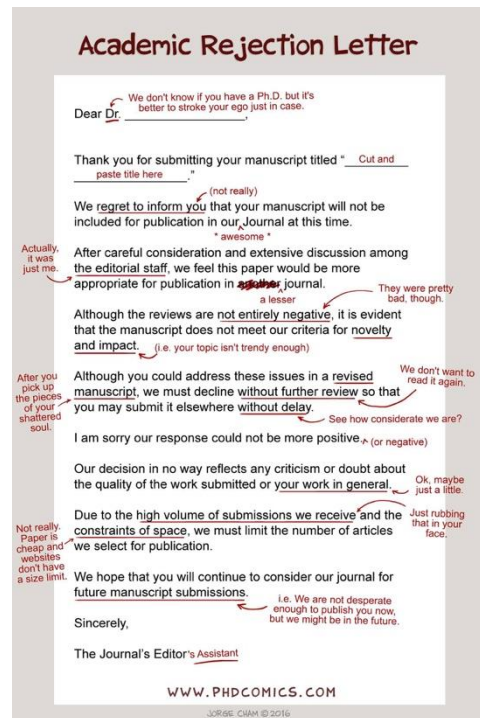
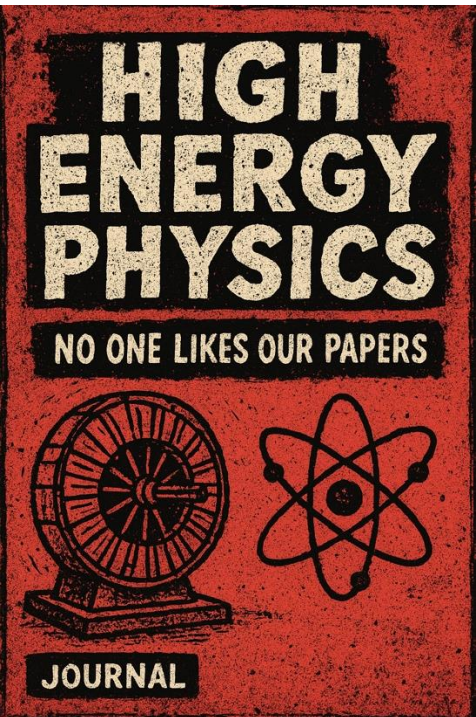
After calibration bias on Λ of 0.7 keV. Similar to statistical error. Uncertainty from K_S mass is 2 keV. LHCb's ultimate potential (not discussed in literature before)

Paper submitted to Journal of Physics G: rejected for not being novel before peer review ☹️

Paper submitted to JINST, rejected within two hours for not being in scope ☹️

The paper contains a lot of good information that is useful to the community. Are journals working in the best interests of the community? Does academic publishing advance science?

<https://www.theguardian.com/science/2017/jun/27/profitable-business-scientific-publishing-bad-for-science>



How to build
your own
journal?



*“Scholarly reflection
by the harbor”*

“Empire had the better ending. I mean, Luke gets his hand cut off, finds out Vader’s his father, Han gets frozen and taken away by Boba Fett. It ends on such a down note. I mean, that’s what life is, a series of down endings. All *Jedi* had was a bunch of muppets” Clerks, Kevin Smith

A Game Where We Embrace Plagiarism and Academic Chaos

The Publish or Perish Game is a humorous party game about academic publishing. Players race to publish manuscripts with useless nonsense while sabotaging each other's research. Suitable for academics seeking catharsis and families who don't mind light emotional damage.

Ages: 14+ | **Players:** 3–6 | **Playtime:** 10 minutes per player



<https://publishorperish.games/collections/english-original>

Curious? Creative? Collective? Communicative?

There is a world of data to explore and this is the time to explore it

- Open the PDG
- Open data is there to mine
- Old bubble chamber data (as we heard in a seminar)

I have an infinite number of ideas for LHCb measurements



We are blessed with many tools in the laboratory for single photon studies: water tanks, dark boxes, 10 and 11" PMTs, x-y stage, integrating sphere, large wavelength shifting plates

DIY additives: Gadolinium sulphate, 4-Methylumbelliferone is cheap

DIY sources We can buy brazil nuts (as we heard in a seminar), we have welding rods

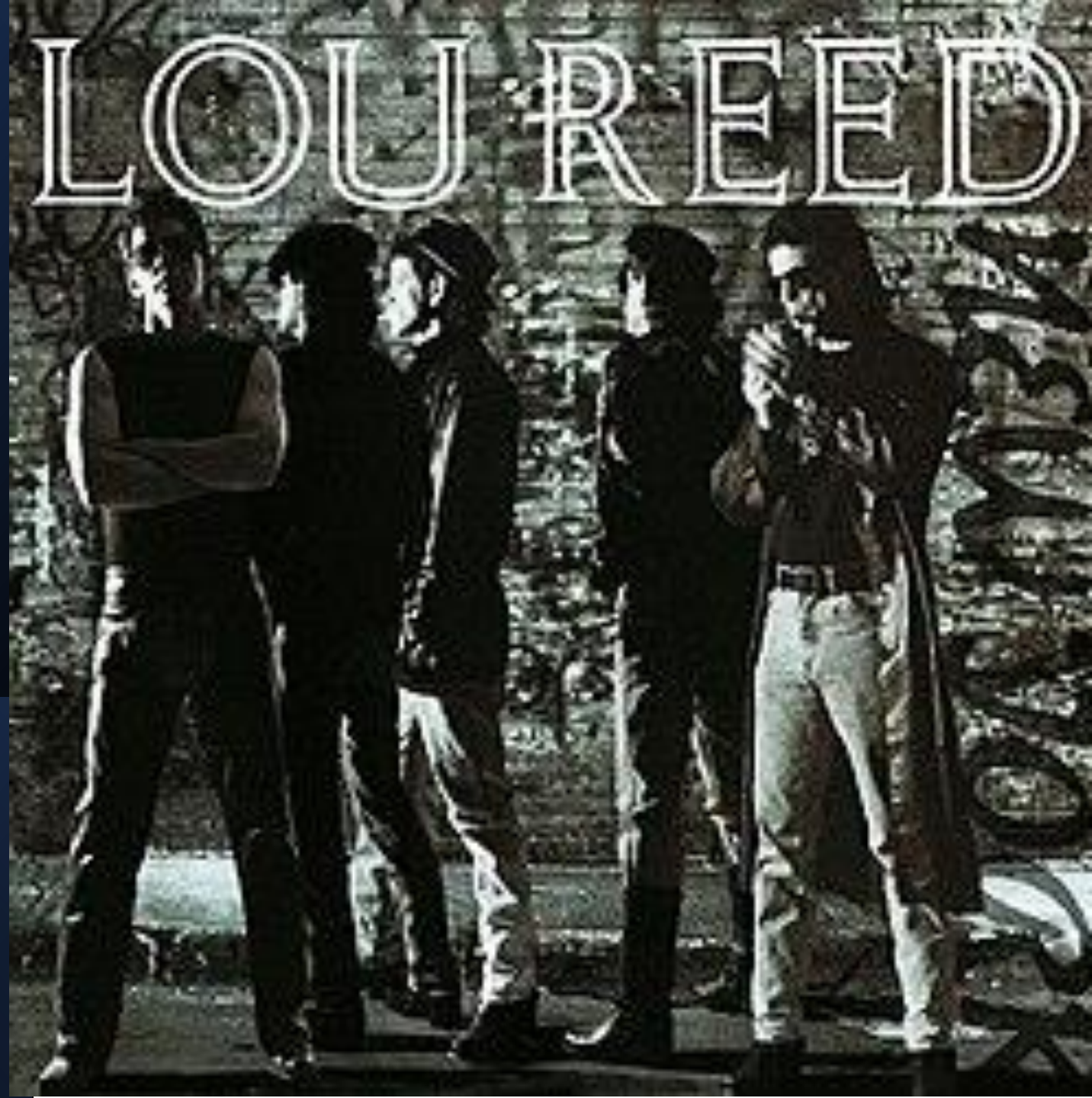
"Those who own their history own their future"

This is the time

This is no time to ignore warnings
This is no time to clear the plate
Let's not be sorry after the fact
And let the past become our fate...

This is the time
Because there is no time

There is no time, Lou Reed



French Disko

Though this world's essentially
An absurd place to be living in
It doesn't call for bubble withdrawal
It said human existence is pointless
As acts of rebellious solidarity
Can bring sense in this world
La Resistance

French Disco
(b-side of Jenny Ondioline 1993)

And some further reading

