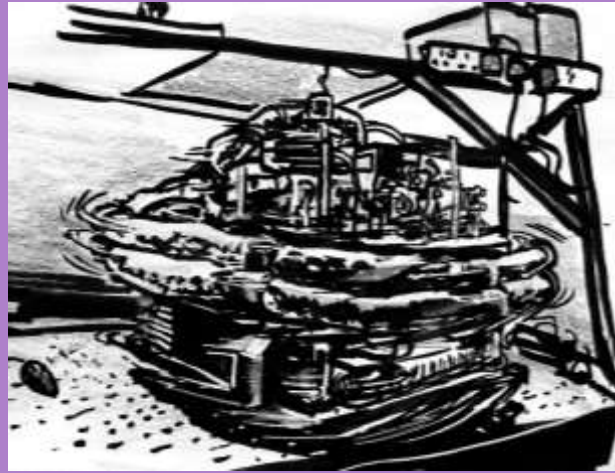
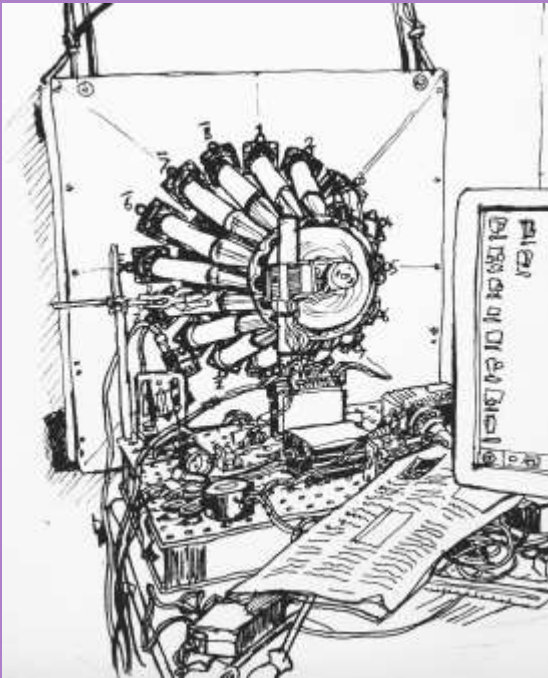


Beyond the binary: uniting physics and life

Dr. Marion Cromb (they/them)



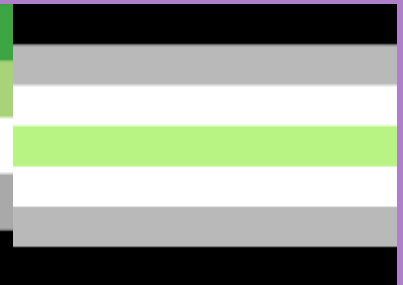
Asexuality:

experiencing little to no sexual attraction and/or desire

Aromanticism:

experiencing little to no romantic attraction and/or desire

Agender: no gender identity, or not being any particular gender, genderless



UNIVERSITY OF
Southampton

(behaviour of) **QUANTUM MECHANICS** (indivisible things)

small scale, small mass



entanglement

quantum vacuum



wave-particle duality



superposition

General Relativity (Einsteinian gravity)

large scale, large mass



time dilation

black holes



curved spacetime

(behaviour of) **QUANTUM MECHANICS** (indivisible things)

small scale, small mass



(more like this tbh)



"God does not play DnD with the universe" – Albert Einstein

General Relativity (Einsteinian gravity)

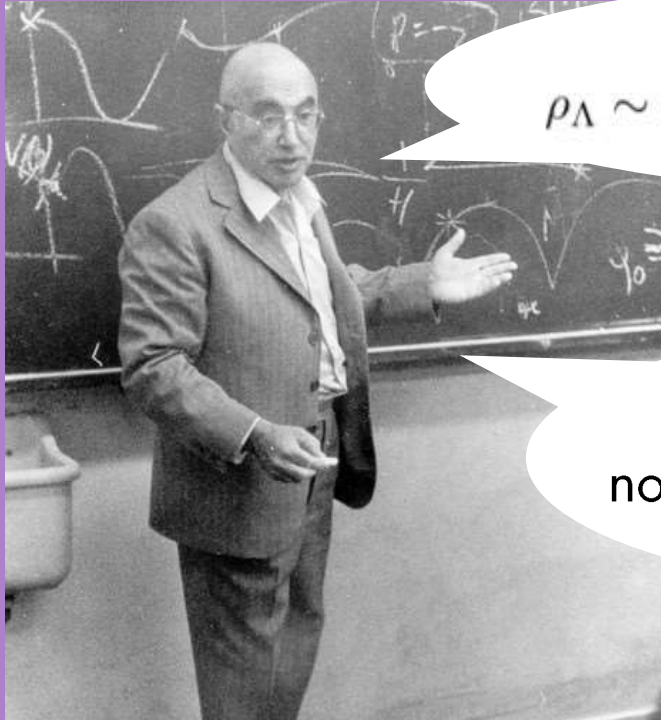
large scale, large mass



(behaviour of) **QUANTUM MECHANICS** (indivisible things)
small scale, small mass

General Relativity (Einsteinian gravity)
large scale, large mass

????? & ???? ?



QM says:

$$\rho_{\Lambda} \sim m \left(\frac{mc}{\hbar} \right)^3 \sim 10^{17} \text{ g/cm}^3, \quad \Lambda = 10^{-10} \text{ cm}^{-2}.$$

Measured $\rho_{\text{vac}} = 5.96 \times 10^{-30} \text{ g/cm}^3$

"...such an estimate has nothing in common with reality"



Who cares??

Gender*

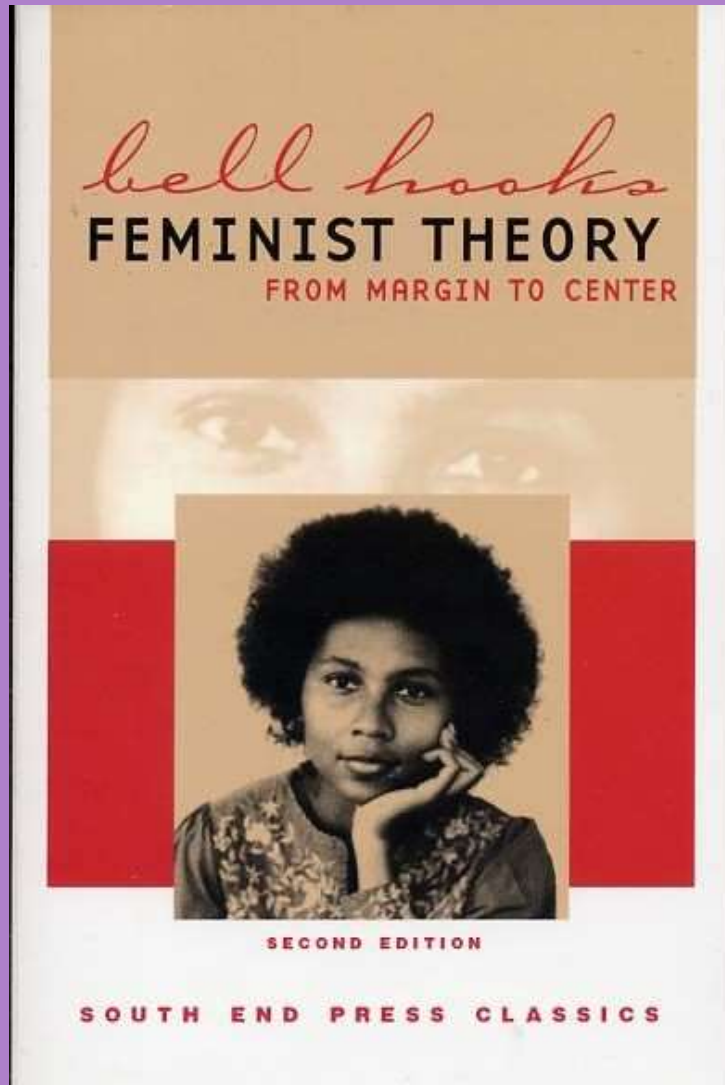
Select

Male

Denial to Disclose



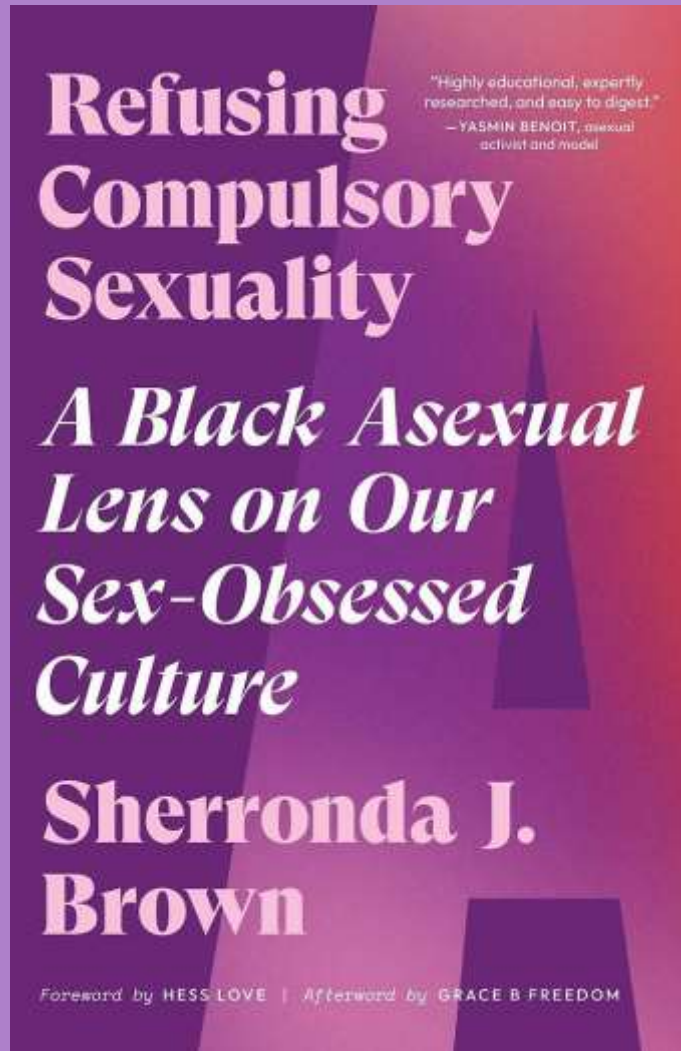
From the margins



*“To be **‘feminist’** in any authentic sense of the term is to want for all people liberation from sexist role patterns, domination, and oppression”*

“Living as we [black women] did—on the edge—we developed a particular way of seeing reality. We looked both from the outside in and the inside out. [...] This mode of seeing reminded us of the existence of the whole universe, a main body made up of both margin and center. Our survival depended on an ongoing public awareness of the separation between margin and center and an ongoing private acknowledgment that we were a necessary part of that whole” – bell hooks

From the margins



Capitalism: an economic and political system based on private ownership of property and business, with the goal of making the greatest possible profits for the owners

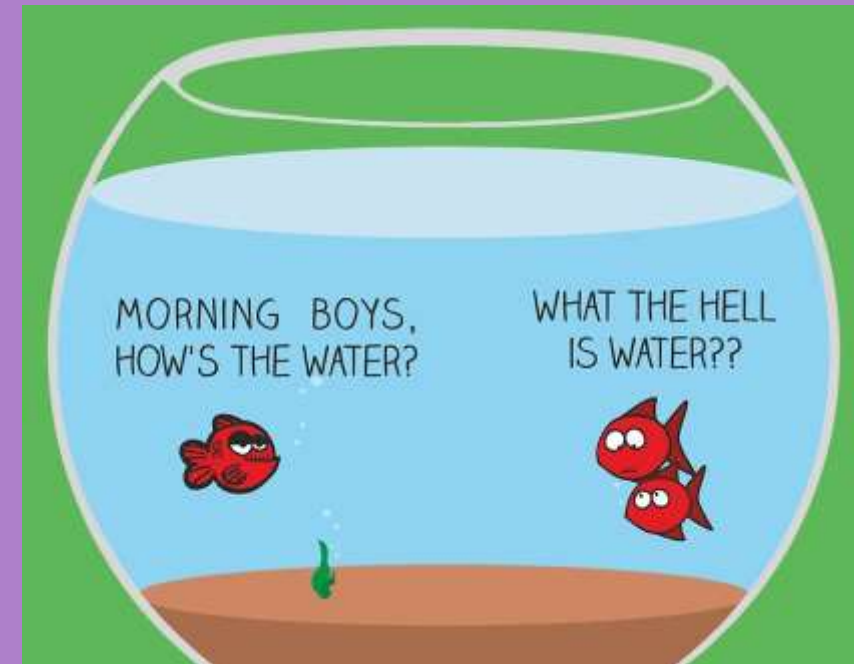
Heteropatriarchy: social/political system of dominance by cisgender heterosexual men, emphasizing a gender binary/differences between men and women to justify oppression. 'hetero-' emphasises how sexism, gender roles and queerphobia come from the same sexist roots.

Cis/cisgender: when gender matches the sex assigned at birth

Compulsory sexuality: a set of social attitudes, institutions and practices which hold and enforce the belief that everyone should have or want to have frequent sex (of a socially approved amount & kind).

Chrononormativity: the use of time to organise individual human bodies towards maximum productivity/ standardized timelines of how our lives should evolve

From the margins



“What does a fish know about the water in which he swims all his life?” – Albert Einstein (4real this time)

From the margins

Some Markers of 'successful adulthood':

- Having sex
- Being in a committed romantic relationship
- Getting married
- Having children
- Completing education
- Moving out of your parents' home
- Getting a 'proper job'
- Owning property

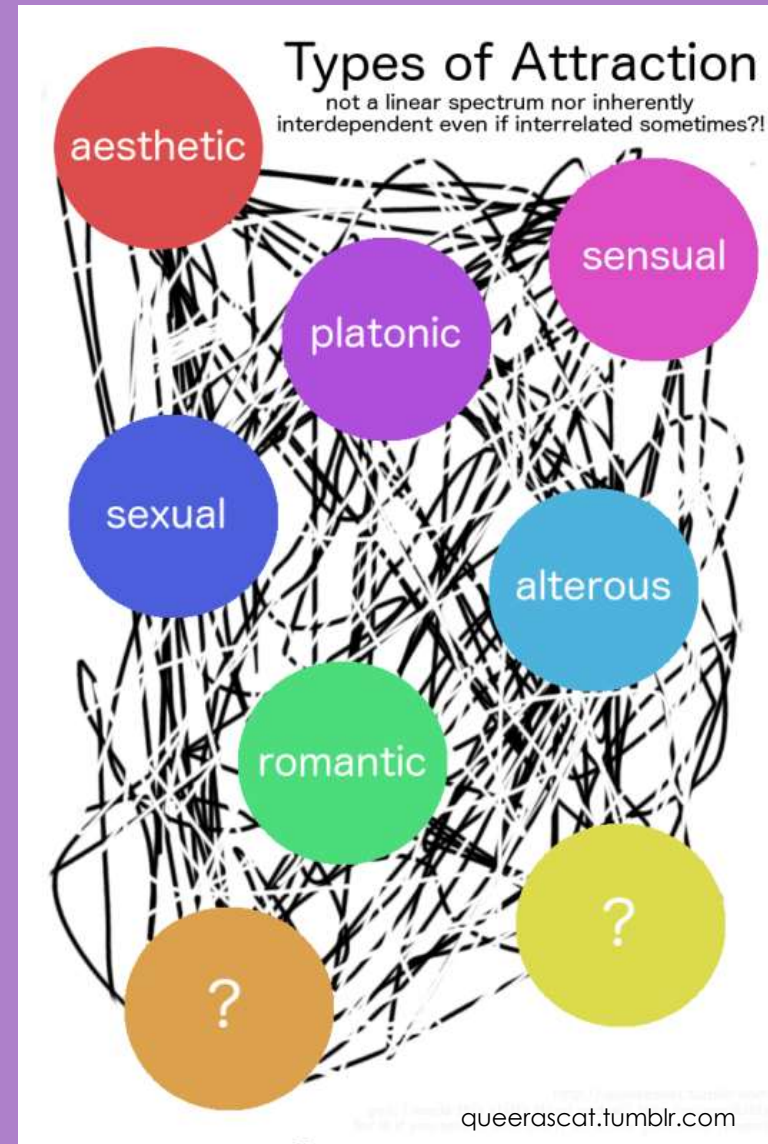
Chrononormativity: the use of time to organise individual human bodies towards maximum productivity/standardized timelines of how our lives should evolve

Compulsory sexuality: a set of social attitudes, institutions and practices which hold and enforce the belief that everyone should have or want to have frequent sex (of a socially approved amount & kind).

From the margins

Ask yourself:

- “How much of the way I (think I) experience attraction has been determined by social norms and compulsory heterosexuality?”
- “How does the way I measure myself against gender and sexual norms limit my choices or experiences?”



Aesthetic: liking someone's looks/vibes, similar to enjoying looking at a beautiful landscape painting

Platonic: friendship and/or inspiring mind and soul

Alterous: desire for emotional closeness

(behaviour of) **QUANTUM MECHANICS** (indivisible things)
small scale, small mass

&

General Relativity (Einsteinian gravity)
large scale, large mass

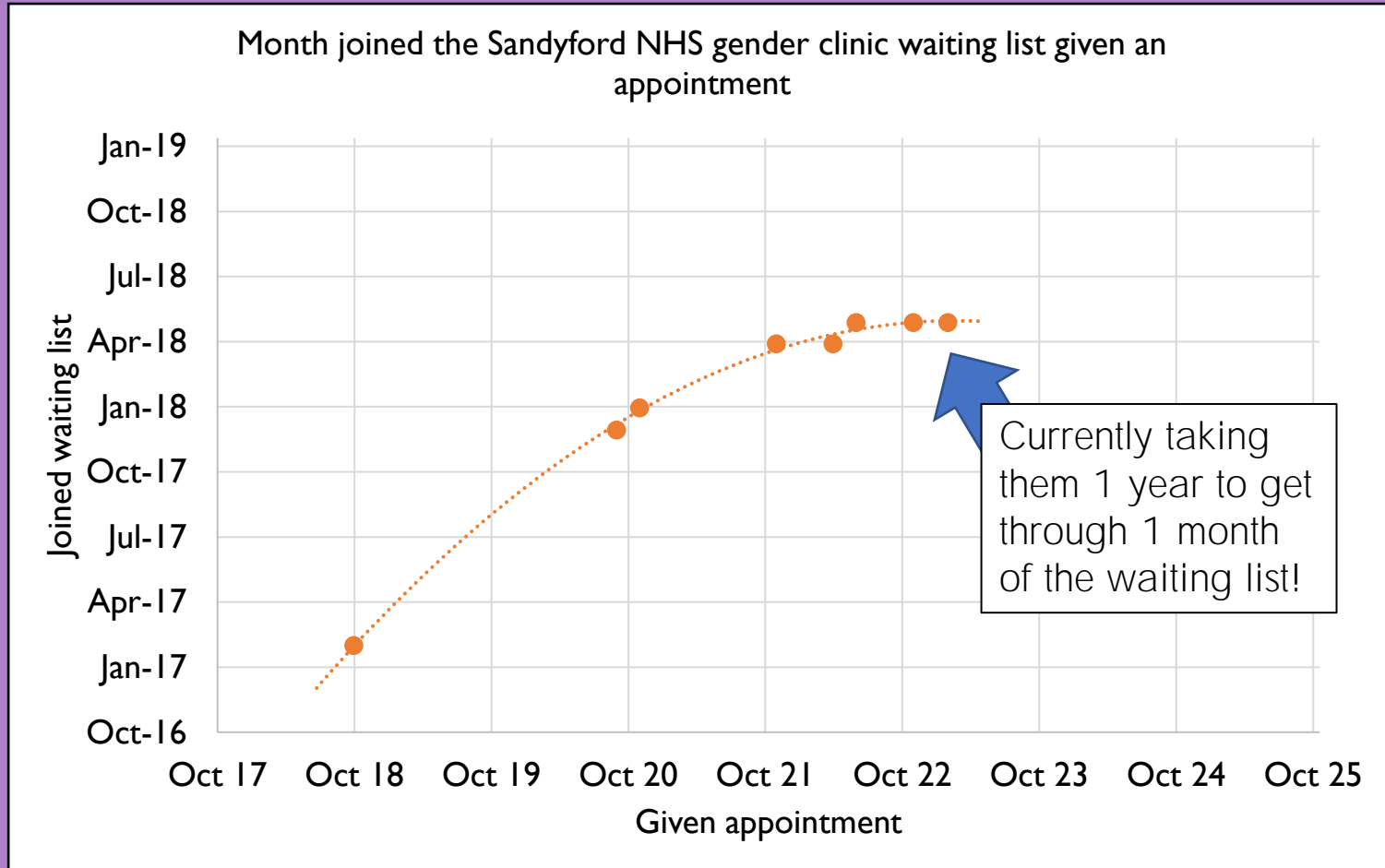
Here be dragons



((If the gender binary is so 'natural', why does its borders need constant policing by reactionary goons to stay intact??))

Uncharted

UK trans healthcare is **BROKEN**



- ~500 people join the waiting list per year
- The clinic aims to see '1 or 2 people from the waiting list per week'.
- In Jan 2023: 2500 adults on the waiting list.

Someone joining the waiting list today can expect a (first) appointment in a mere **25 to 50 years** 🍷

UK trans healthcare is **BROKEN**

Our current waiting times are:

As of February 2023 the person at the top of the waiting list for their initial assessment appointment has waited **60 months** (5 years) for an appointment and is currently still awaiting appointment allocation.

As of February 2023 the person at the top of the waiting list for their second assessment with our Medical team (for diagnosis and to agree treatment plans) has waited **46 months** (3 years and 10 months) to be seen since their initial assessment appointment (and a total of **71 months** (5 years and 11 months) from their referral) and is currently still awaiting appointment allocation.

Waiting

There are currently 3947 people on our **standard waiting list** to be seen. We are currently booking appointments for people who were referred in approximately January 2019. If you were referred before this date and have not had an opt in letter to book an appointment or a call from us to offer an appointment, please contact the service.

There are 45 people on our **priority waiting list** who are waiting for an appointment to be booked. The next person to be allocated an appointment was referred in approximately September 2022.

For appointments such as the second assessment appointment and surgical opinions for surgery, there are waits of approximately six months.

For a hormone appointment, there are currently 138 people waiting. The next person to be allocated an appointment was placed on this list in June 2022.

Our current estimated wait times.

The current estimated wait time for new referrals (May 2022) is 49 months.

We are currently seeing patients referred in January 2019.

- Number of people on our waiting list: **12,296**
- Number of referrals received in the month: **264**
- Number of first appointments offered in the month: **41**
- Total appointments offered in the month: **827**
- We are currently offering first appointment to people who were referred in: **July 2018**

Waiting times

We are currently booking appointments for people who were referred to the service in the beginning of May 2018. The longest wait time is currently 58 months as of March 2022.

Current waiting information: (updated April 2023)

- The number of people currently waiting for their initial appointment: 4,245
- Number of people joining the waiting list for an appointment in the last month: 63
- Number of people currently receiving treatment: 584
- The last people to have initial assessments were referred to the service in June 2016, but initial assessments are not currently being made.
- Number of people who have completed their treatment in last month: 48

Gender pick 'n' mix



Names



Pronouns



Titles



ID documents



NHS records



Visibility



Clothes



Voice



Menstruation



Head hair



Body hair



Facial hair



Muscles



Upper body



Lower body



Eyes



Face



Fragrance



Hands



Fertility



Libido



Mood

<https://genderkit.org.uk/>

(behaviour of) **QUANTUM MECHANICS** (indivisible things)

small scale, small mass

&

General Relativity (Einsteinian gravity)

large scale, large mass

Here be dragons



Uncharted

Linear Acceleration

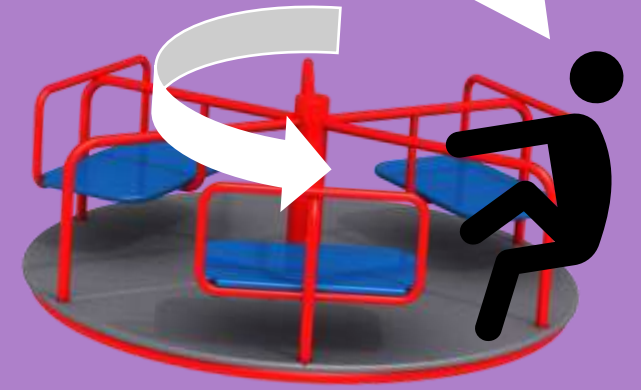
Feels like my weight is pulling me downwards!

Feels like my weight is pulling me downwards!

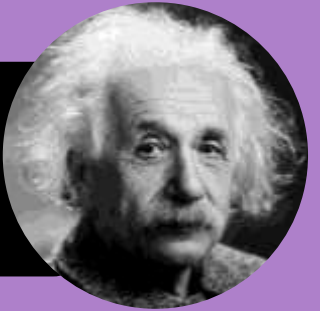


Circular Acceleration

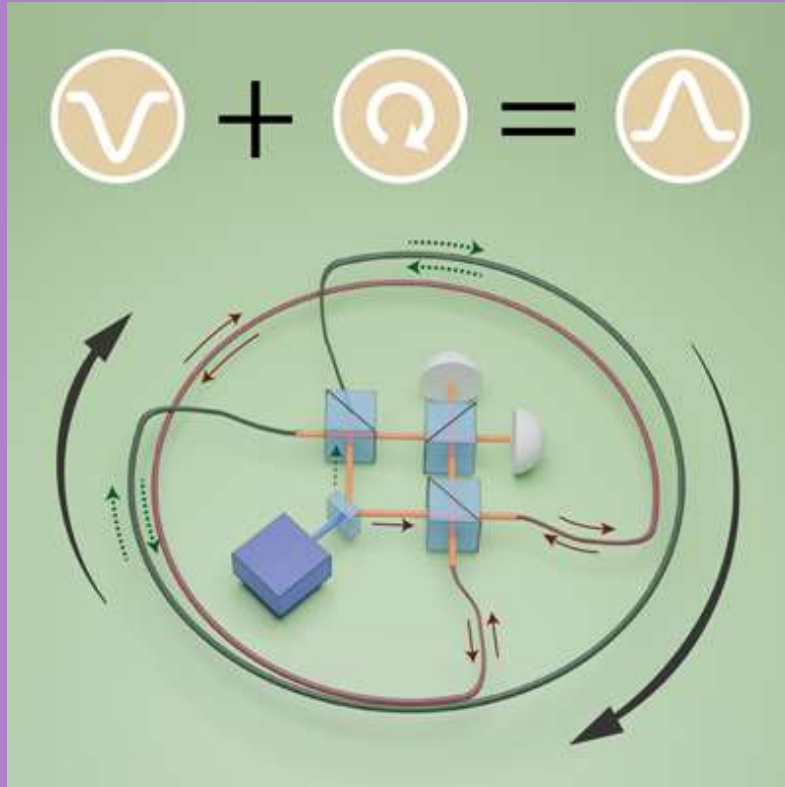
Feels like my weight is pulling me outwards!



Curved spacetime
≡
non-inertial motion



Rotation Modifies photon entanglement symmetry

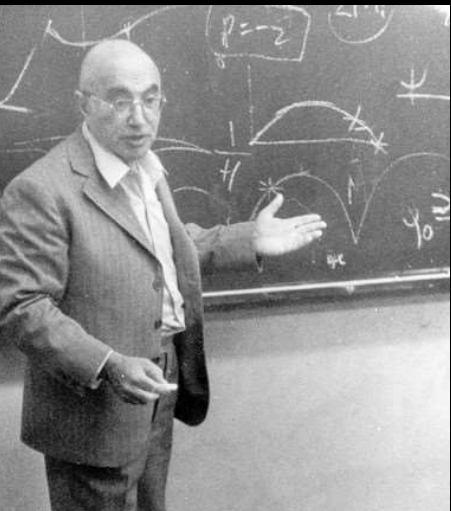
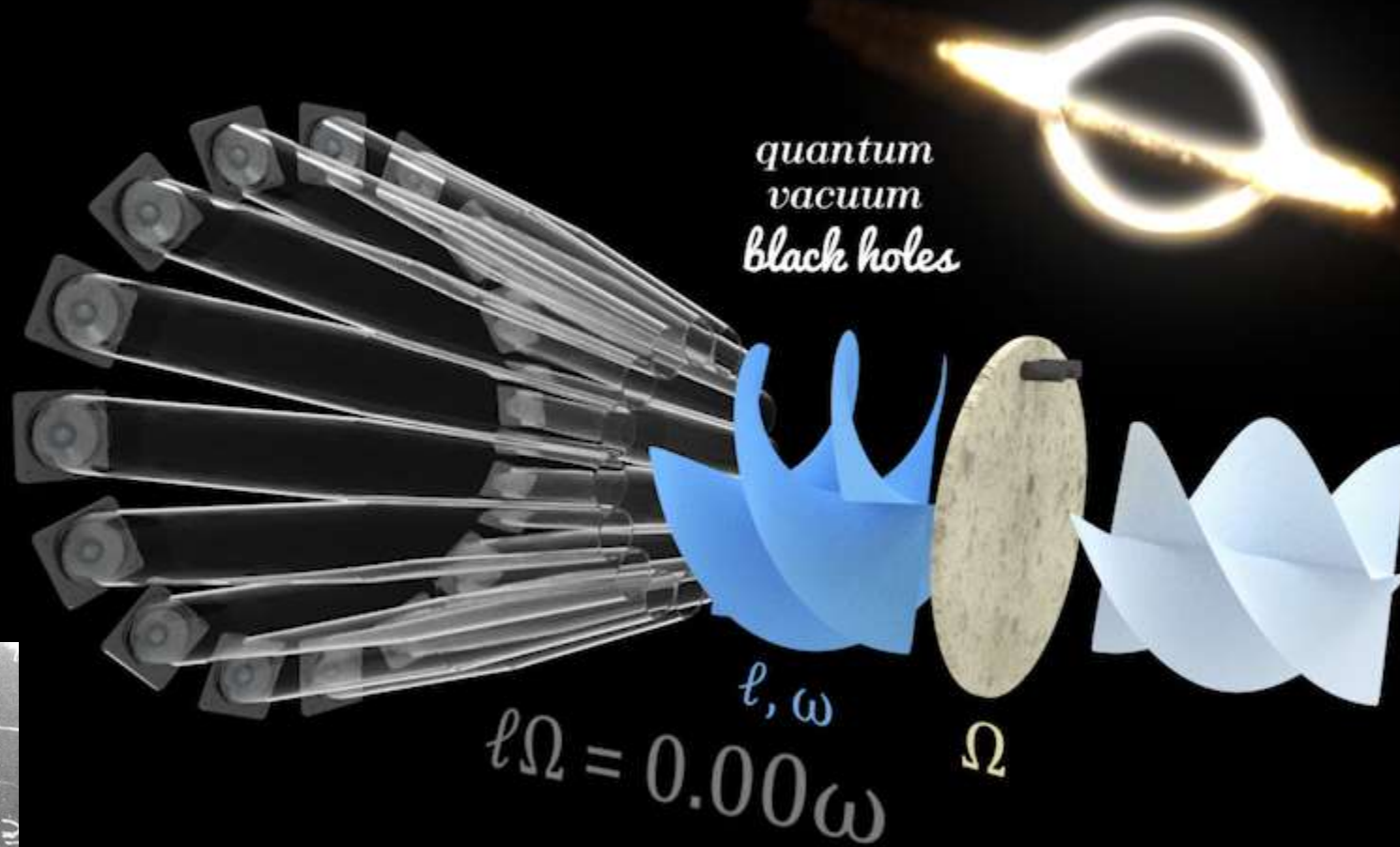


M. Cromb, S. Restuccia, G. M. Gibson, M. Toroš, M. J. Padgett, and D. Faccio,
"Mechanical rotation modifies the manifestation of photon entanglement," *Phys. Rev. Res.* **5** (2023).

M. Toroš, M. Cromb, M. Paternostro, and D. Faccio,
"Generation of Entanglement from Mechanical Rotation," *Phys. Rev. Lett.* **129**, 260401 (2022).

The Zel'dovich effect

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M. C. Braidotti, A. Vinante, G. Gasbarri, D. Faccio, and H. Ulbricht, "Zel'dovich Amplification in a Superconducting Circuit," Phys. Rev. Lett. **125**, (2020).



bell hooks - *Feminist Theory: From Margin to Centre*

Sherronda J. Brown - *Refusing Compulsory Sexuality: A Black Asexual Lens on our Sex-Obsessed Culture*

