

# THE ESSENTIAL SINGULARITY

Tuesday September 30, 2025 (Issue #5)



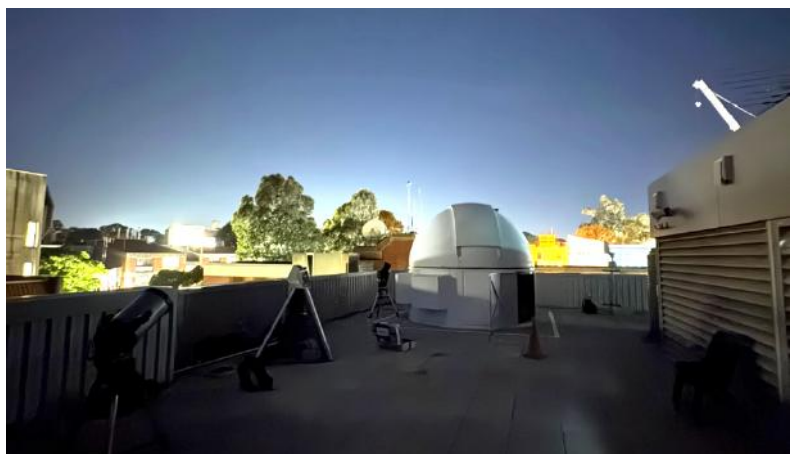
## Recap of events

Kyna Schrick and  
Nathan 'Greg' Jones

On the 29th of August, we joined with the Australian Institute of Physics to run Curtin Under the Stars. It was a lovely night, and we were able to get good views of the Moon, double stars, open clusters, globular clusters, and even Saturn! Thanks for coming, and special thanks to those who brought/operated a telescope and helped manage everything.

From the people who brought you the award-winning event PhysX came the PhysClub Feud! On the 17th of September, many physicists and friends teamed up and threw down against each other in various games of wit and aptitude. From Wiki racers and GeoGuesser to egg drops and Jenga contests, many skills were flexed, and a few hairs were pulled. While the most important prize is the insults thrown at each other under duress, the PhysClub Feud has seen the first winners (and losers?) of the Physics Club Competition Bricks! All first and last place winners of all physics-club-presented competitions will now have their great achievement etched in the stone, held in the physics club display cabinet. We look forward to seeing this magnificent award in the hands of many champions to come.

Finally, on the 24<sup>th</sup> of September, we ran our cross-institutional enrolment workshop. There isn't much else to say (bureaucracy isn't a very exciting topic), but we were glad to see all those who attended, and the slides are available on our website.



Top: The Curtin Under the Stars astronomy night. Upper mid: Telescopes for Curtin Under the Stars. Lower mid: PhysClub Feud activities. Bottom: Inaugural winners of the Bricks.

## Ig Nobel Prize in Physics awarded for perfect pasta sauce

Jamie Erak

It's that time of year again! As many readers will know, the 2025 Nobel Prize for physics will be announced on the 7th of October. In the spirit of Nobel season, let us discuss the 2025 Ig Nobel Prize in Physics, which has already been awarded.

The 2025 Ig Nobel Prize in Physics was awarded to a team from Italy, Spain, Germany, and Austria for their work on the physics of pasta sauce, which was published in *Physics of Fluids* (doi.org/10.1063/5.0255841). The team investigated the phase transition that can lead to clumping in cacio e pepe sauce, which is notoriously difficult to prepare, and identified starch concentration as the key factor influencing sauce stability.

The Ig Nobel Prizes were started in 1991 to recognise humorous discoveries that 'make people laugh, then think'. Some notable past prizes in physics have been for levitating frogs (doi.org/10.1088/0143-0807/18/4/012), hula-hooping dynamics (doi.org/10.1007/s00422-003-0460-4), and vibrating earthworms (doi.org/10.1038/s41598-020-65295-4).



The perfect cacio e pepe pasta, prepared at the Institute of Science and Technology Austria (ISTA).

## Greg's true nature!

Kyna Schrick

Here we see the iconic Jonsey, a new emotion from the world of *Inside Out*: 'Chemist'. Chemist is the long-lost brother of Anger, but he used all his fire to boil chemicals in the lab, leaving a suspicious trail of fumes if he is agitated. He claims it is "just water", and that he has a "normal-temperature head", but the family resemblance is uncanny. This also explains his copious use of hats to hide his true identity.



Note from the editor: This article is purely comical and was published with Nathan's approval.

## Lunar eclipse photography

Karissa Clarke-Liddell

On the 8<sup>th</sup> of September, a lunar eclipse occurred. In WA, there was a partial eclipse from 12:38 am until 3:56 am, and the full eclipse occurred from 1:30 am until 2:52 am, according to an ABC article (<https://www.abc.net.au/news/science/2025-09-05/total-lunar-eclipse-blood-moon-path-september-7-2025/105714016>).

The full moon photo was taken at around 11:30 pm on Sunday September 7<sup>th</sup>, and the partial moon photos were taken at around 1:00 am on Monday September 8<sup>th</sup>. There were intermittent clouds, and unfortunately, I did not get to see the full eclipse and its red moon.

The setup took inspiration from the astronomy night: I had a pair of binoculars zip-tied to a camera stand. The photos were taken with a small point-and-shoot. The rainbows on the outline of the moon are a chromatic aberration, dominantly from the binoculars.

The setup had some drawbacks:

- **Backbreaking:** Because of the moon's high angle and the camera stand's low height relative to me standing, I had to crouch and look up at really awkward angles.
- Lining the camera up with the binoculars is very finicky.



## Upcoming events

### Study sessions

Date: Every week on Wednesday

Time: 12:00-14:00

Venue: 301.147 (physics seminar room)

Join us for weekly study sessions; a chance to study individually, with your peers, or to connect with senior students. This semester, we are also working on constructing a 'space-time globe', so you can come get some hands-on experience and build something interesting.

### Annual General Meeting and Board Games

Date: Wednesday October 8

Time: 18:00-20:30 (AGM finishes at 18:30)

Venue: 312.222

Join us for a night of pizza and board games (and an Annual General Meeting, but we promise it'll be quick)! If you're interested in helping out next year, please let us know by the nomination form

([https://docs.google.com/forms/d/e/1FAIpQLSeb91IHKLrvINWT-CrJ1Ui\\_pqR8FZ15HLvcRE9e4J11T46xUQ/viewform](https://docs.google.com/forms/d/e/1FAIpQLSeb91IHKLrvINWT-CrJ1Ui_pqR8FZ15HLvcRE9e4J11T46xUQ/viewform)). It will be a fun (and productive) night, and we look forward to seeing you there!

### Curtin Science Alliance Study Session\*

Date: Monday October 20

Time: TBC

Venue: TBC

Stressing about exams is much more fun when we do it together! Join the Science Students for Snacks and Study at the end of Semester. More information to follow.

### Curtin Science Alliance Sundowner

Date: Saturday November 8

Time: 18:00-21:00

Venue: Lil's Rooftop Bar

Come and mingle with the other science clubs at our fanciest event of the year. Celebrate the end of semester with old and new friends, good food, and drinks. Tickets are available at <https://curtin-cucc.tidyhq.com/public/schedule/events/77517-curtin-science-alliance-2025-sundowner>.

\*Being planned, but subject to change.

## Editorial

Jamie Erak

As the end of semester 2 approaches, many of us, and particularly those in third or honours year, will have to write lengthy reports or dissertations over the coming weeks. Since many of us struggle with this (including myself as I write this editorial!), it is appropriate to discuss why it's common to struggle with writing, and ways to make it easier.

People struggle with writing for a variety of reasons, including a lack of ideas (known as writer's block) or simply procrastination. This is true both in fiction and academic writing, and there are a variety of strategies that can help. In my experience, I have found it much easier to approach writing in a non-linear manner. Rather than trying to write from start to finish, try jumping to whatever section you have the capacity and motivation to do at present. Small additions like this add up quickly.

## Book suggestions

Reading can be an enjoyable and restful way to take a break from studying. Here are our top recommendations for this month:

### *Elusive: How Peter Higgs Solved the Mystery of Mass* by Frank Close

In 2012, the discovery of the Higgs boson was celebrated across the world. In this book, Frank Close, a friend of Peter Higgs, allows readers to get a glimpse into the notoriously private life of the particle's namesake. It explores how his childhood and educators shaped his interest in physics, but there is a lot more to his story than that. *Elusive* provides context to Higgs' discovery by exploring the other discoveries that enabled it. It discusses that multiple other scientists had independently proposed the Higgs mechanism at the same time, and the convoluted ways in which their works influenced each other.

### *To Sleep in a Sea of Stars* by Christopher Paolini

When Kira, a xenobiologist, discovers a relic on an alien planet, it sparks a hostile first contact. Uniquely positioned, she must fight for cooperation as tensions rise. Standing at a whopping 850 pages, this epic introduces a world of aliens and advanced technology, asking questions about the lines between biology, technology, and intelligence, and what it means to be human. While firmly science *fiction*, the author makes an effort to be plausible, even including a 10-page "excerpt" from an in-universe textbook "explaining" faster-than-light travel.



**Quiz**

1. The determinant of what matrix is used for changes of variables in integrals?
2. Olber's paradox arises because the brightness of the sky is expected to be what?
3. What action gives rise to the Einstein field equations?
4. What interpretation of the wave function relates it to probabilities?
5. The Wheeler-DeWitt equation describes what?

Answers:  
 1. The Jacobian  
 2. Infinite  
 3. The Einstein-Hilbert action  
 4. The Born interpretation  
 5. The wave function of the universe

**Quote of the month**

"Try saying antisymmetric metric five times fast!"

- Jamie Erak

**Joke of the month**

Two physicists disagreed about how electricity and magnetism are related.

They settled it with a dual.

**Interesting fact**

Dividing 355 by 113 gives  $\pi$  to six decimal places! This approximation was discovered by Zu Chongzhi in the 5<sup>th</sup> century, and was named 'Milü', which translates to 'close ratio'.

Many thanks to Igor for informing me of this trick!

**Puzzle**

Edward Mirco

Alice and Bob decide to cool off after an intense day of minigolf in sensory deprivation tanks. When they try to get out, they find that they have both been locked inside by a lock with a 3-digit code (digits from 1-9), with no way of communicating. In Bob's tank, a note is taped to the top with the code; 2-4-8, and a set of instructions: "3 attempts at entering the code for this tank (tank B), 1 for the other tank (tank A). If you do not enter the correct code by the 3rd attempt, the tank will not open. After each attempt in tank B, a light will flash in tank A a number of times equal to the sum of the digits entered into tank B's lock, and a series of tones will indicate how many digits were correct (they do not have to be in the correct position, and the tones only indicate the number of correct digits)." A similar note in Alice's tank explains the meaning of the flashing lights and tones, that Bob knows the code, but she does not, and that she will only get one attempt to enter the code after Bob has done his 3 attempts. If both Alice and Bob are completely rational, and Bob wants to communicate the code to Alice via the flashing lights and tones in the most concise, unambiguous way possible, what codes should Bob enter?

**Answer to the previous puzzle**

Alice must run at least  $2/(\pi+1)$  m/s. For the bonus question, Alice must run at this speed for a minimum of  $2\pi$  seconds.

**Word search**

Theme: Astrophysics

I	S	P	Q	F	L	N	H	L	Y	Y	S	H	L	V
Q	I	R	O	N	R	H	S	T	E	X	U	M	H	H
G	D	R	I	L	Z	N	I	D	K	A	P	S	W	S
U	R	F	A	H	Y	S	J	W	P	L	E	D	C	X
Z	R	A	T	S	O	T	O	R	P	A	R	D	Q	U
T	K	D	Z	N	A	D	R	H	T	G	N	D	R	O
A	S	N	I	N	U	U	M	O	V	D	O	A	V	G
G	C	M	B	N	D	P	Q	V	P	S	V	R	N	D
I	U	C	E	H	U	M	J	J	O	E	A	I	Q	R
L	Q	Q	R	L	O	S	N	S	W	B	S	A	I	A
R	J	E	S	E	A	E	B	W	T	N	W	R	Z	I
O	P	A	C	I	T	Y	Z	Q	E	Z	O	T	T	M
M	R	H	G	V	P	I	M	L	A	D	M	T	B	P
H	U	B	B	L	E	U	O	J	S	M	A	V	I	V
L	O	Z	D	V	D	M	W	N	V	Y	G	N	K	W

Galaxy

Lensing

Polytrope

Quasar

Gamow

Luminosity

Protostar

Supernova

Accretion

Hubble

Opacity

Pulsar

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Past issues, and full solutions to puzzles, can be found on the Curtin Physics Club website: <http://curtinphysics.tidvqh.com>