

String Theoretical Implications for the Hubble Tension

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What is ChatGPT

- A machine you can talk to,
- Based on a machine learning approach,
- That basically predicts the most likely next word to string together (surprisingly) coherent sentences as answers to a given input.

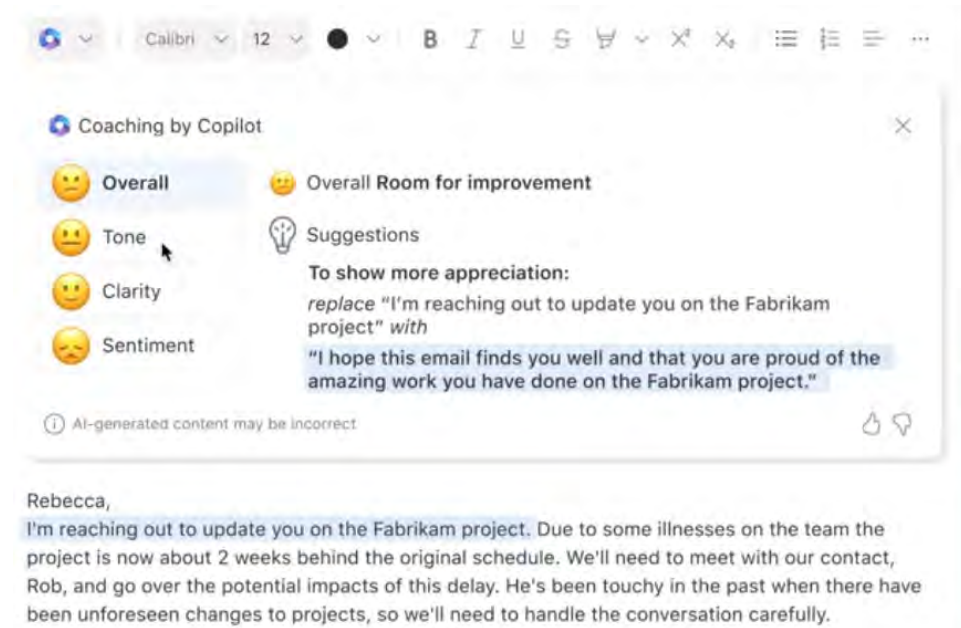
What can ChatGPT do?

- Play games
- Write books
- Write emails
- Code
- Translate texts



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iHola a todo el mundo!

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What can ChatGPT do?

- Play games
 - Write books
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 - Translate texts
- Isn't physics the best subject to study?
 - ¿No es la física la mejor materia para estudiar?
 - Ní hé fisic an ábhar is fearr le staidéar, nach bhfuil?
 - Isch Physik nid s'beschte Fach zum studiere?



Showcase

THE WEAK GRAVITY CONJECTURE

The Weak Gravity Conjecture

- Gravity is the weakest force
- This is true for all string theoretical compactifications¹
- There is a stable particle whose repulsive gauge force exceeds the attractive gravitational force and which minimises the mass-to-charge ratio m/q .

Weak Gravity Conjecture – Formal Definition

- In a theory with a $U(1)$ gauge symmetry; gauge coupling g ; and action

$$S = \int d^d X \sqrt{-g} \left[(M_p^d)^{d-2} \frac{R^d}{2} - \frac{F^2}{4g^2} + \dots \right],$$

- with d the number of dimensions of the EFT, R^d the d -dimensional Ricci scalar, $F^2 = \frac{1}{q!} F_{\mu_1 \dots \mu_q} F^{\mu_1 \dots \mu_q}$ the strength of the gauge field $A_{\nu \dots}$, e.g. with the relation $F_{\mu\nu} = \frac{1}{2} \partial_{[\mu} A_{\nu]}$, and M_p^d the d -dimensional Planck mass; a particle with mass

$$m \leq \sqrt{\frac{d-2}{d-3}} g q (M_p^d)^{\frac{d-2}{2}},$$

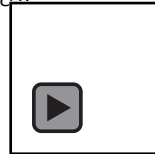
- q the charge of the particle, exists.

Audience Matching

CHATGPT CAN TARGET A
SPECIFIC AUDIENCE OR
IMPERSONATE
WORDSMITHS AND
COPY THEIR STYLE.

The WGC as the keynote topic at a baking conference

- Ladies and gentlemen, esteemed bakers and fellow enthusiasts, thank you for giving me the opportunity to speak at this wonderful gathering of talented professionals. Today, I'd like to introduce you to a fascinating concept from the realm of theoretical physics that bears an intriguing resemblance to the artistry you practice in your own craft. It's called the "Weak Gravity Conjecture."
- Just as the delicate balance of ingredients and techniques is essential in baking the perfect pastry, the Weak Gravity Conjecture suggests a balance in the universe, where the gravitational force interacts with charged particles. Imagine that in your bakery, you have to ensure that every ingredient, no matter how small, contributes to the overall harmony and flavor of your creation. In a similar way, the Weak Gravity Conjecture suggests that in the cosmic kitchen of the universe, particles with electric or magnetic charges must not be too heavy compared to their charges.
- You see, just as you might not want a single overpowering flavor to dominate your baked goods, the Weak Gravity Conjecture suggests that in nature, no particle should carry a charge that's way too strong for its mass. It's like saying that each ingredient, no matter how unique, should play its role in a balanced symphony of flavors, ensuring the harmony of the final result.
- In your baking, the right balance creates a delicious treat that pleases the palate. In the universe, the Weak Gravity Conjecture proposes that the right balance between the strength of gravity and the electric or magnetic charges of particles ensures the stability and structure of the cosmos.
- So, just as you understand the harmony of ingredients, textures, and flavors in your creations, the Weak Gravity Conjecture reveals that our universe is built upon a delicate balance that contributes to its overall beauty and coherence. Much like your skillful hands create culinary masterpieces, the universe follows a recipe of physical laws that make it a masterpiece in its own right.



Utility and deficiency

- Good at synthesizing and summarising,
- rephrasing and rewording,
- finding analogies,
- identifying relevant keywords and highlighting core concepts,
 - Non-native speakers can overcome language-barriers and improve their writing
 - Craft short essays
 - Posters: spend more time on conceptualisation, less on writing
 - Find analogies for educational and outreach endeavours
- Cannot create new knowledge,
- check facts,
- answer genuine questions,
- be trusted

It's an always on companion that is good with words but cannot be trusted.

