Writing an Astrobite

A guide to concise paper summaries

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What is Astrobites?

astrobites

THE ASTRO-PH READER'S DIGEST | SUPPORTED BY THE **AAS**

An international collaboration of astronomy & astrophysics graduates

Astrobites is a (mostly) daily journal providing **bite-sized summaries** of recent papers in astronomy

These paper summaries are targeted at undergraduates with a strong emphasis on making the content **understandable and engaging**.

What is an “Astrobite”

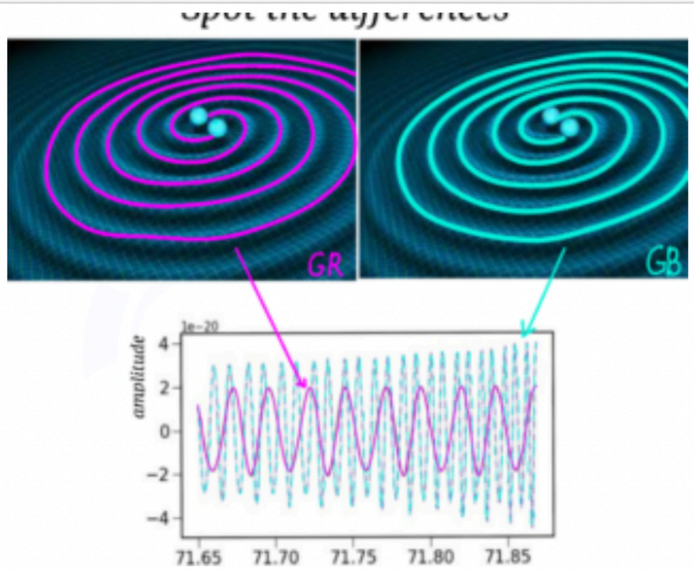
Brief paper summaries: **500-800** words
(ideally no more than 1000)

The aim is to cut directly to the heart of what the paper is about, why it’s important, etc.

Posts generally contain **1-2 key figures**. Together, they should:

- Represent the important ideas of the paper
- Fit in with your overall piece

These figures may not necessarily be the “most prominent” in the paper!



How to use gravitational waves to test if Einstein was right

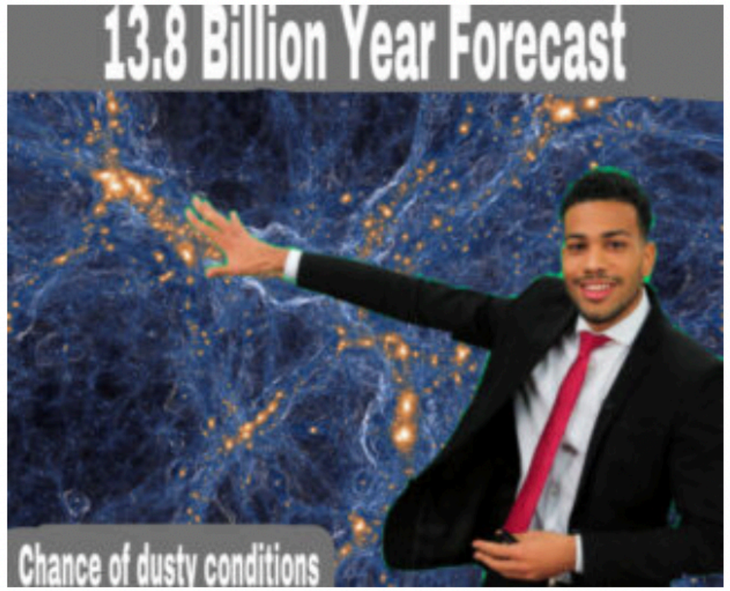
by Guest | Mar 16, 2022

The quest for the true nature of gravity continues! Can gravitational waves help us find the right answer? Today’s paper describes how this could work.

Target Audience and Writing Style

Astrobites primary target is **undergraduates**… but all posts should be as digestible as possible to a general audience.

- Writing style is informal with minimal jargon
- Background context is important so the reader appreciates **why** the study is important.
- Technical terms must be explained (often with hyperlinks)
- Posts must flow well and keep the reader engaged
- Creativity and personal flair is highly encouraged, along with puns / pop-culture references (where appropriate)



Forecasting the obscured first few billion years

by Olivia Cooper | Feb 22, 2022

What will JWST reveal about the obscured early Universe? Today's authors process simulations to find out

Structure of a Typical Astrobite

Introduction / Context

- What is/are the topic(s) of the paper?
- What does the paper seek to *actually* address?
- Provide some context! What's so special about the topic or this paper? Why is it important to the wider field?
- Often a brief historical background is good to "set the stage" for the rest of the piece
- Your aim is to provide enough background so the reader knows what the paper is about and why they should care
  (it's often here that readers will decide whether it's worth it to continue reading)

Structure of a Typical Astrobite

Methodology

- What did the authors actually do?
- How was the study conducted?
- Best to avoid equations unless absolutely necessary; focus instead on key concepts
- Code and/or simulations need not be described in detail
- Highlight anything novel and/or unorthodox

The analytic solution for a linearly polarized Alfvén wave is derived in Section 3.3 with the result for the Fourier mode amplitudes given by equations (26) and (27). When the initial perturbation is such that $\delta B_c(a_i) = 0$, the solution in real space can be written

$$\frac{\delta B_c(x,a)}{B_c} = -A_u \left(\frac{a}{a_i}\right)^{-1/4} \frac{\sqrt{a_i}\Omega_A}{\kappa} \sin(\psi)\sin(kx), \quad (73)$$

$$\frac{\delta u(x,a)}{\mathcal{V}_A} = A_u \left(\frac{a}{a_i}\right)^{-3/4} \left(\cos(\psi) - \frac{\sin(\psi)}{4\kappa}\right)\cos(kx), \quad (74)$$

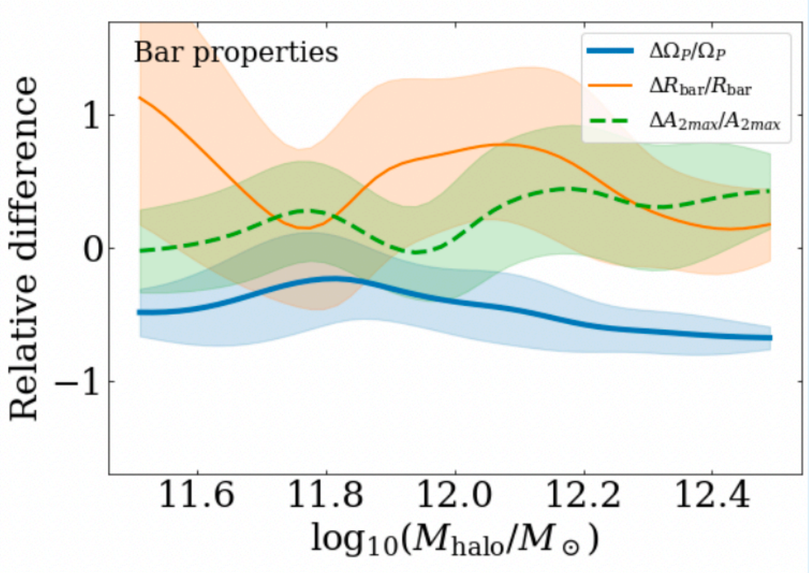
where Ω_A, κ and ψ are defined in equations (16), (24) and (28), respectively.

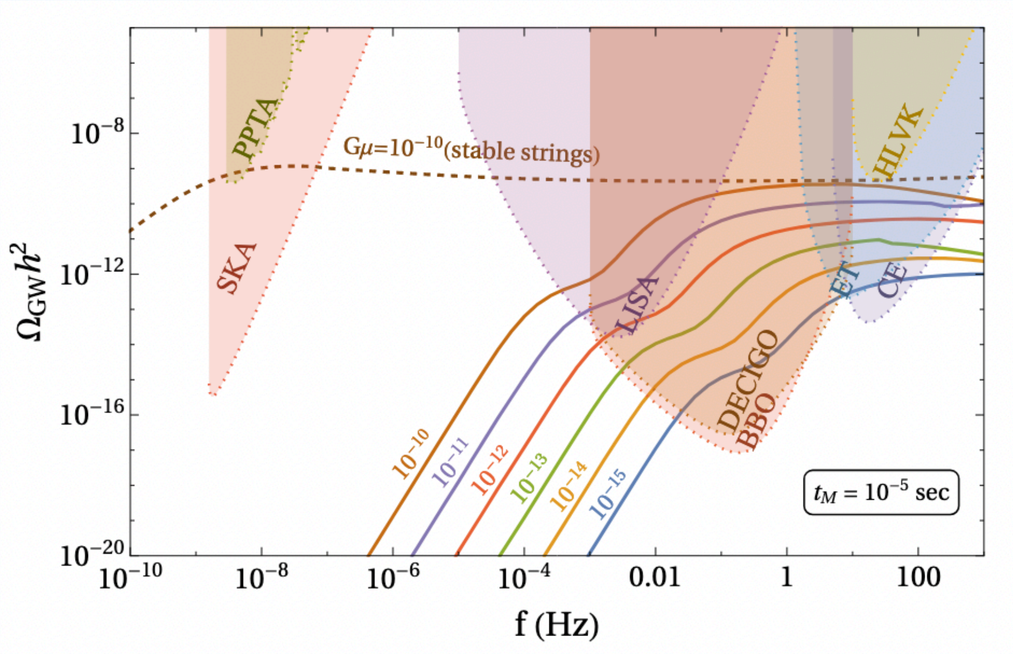
- If it's a math-heavy / theoretical paper, just summarise important concepts (e.g NFW halo, Salpeter IMF)

Structure of a Typical Astrobite

Results

- What are the key results and takeaways?
- What figures best encapsulate these results?
- Which figures fit the narrative of what you're trying to convey?
- Figures **must** be referenced in the body
- Captions should be concise and self-explanatory.
- If you cited this paper, what important results would **you** remember?





Structure of a Typical Astrobite

Discussion and Conclusion

- What is the significance of the main outcomes of the paper? What implications do they hold for the topic and/or astronomy at large?

- An Astrobite should have a proper conclusion to reinforce the key takeaways and provide a satisfying ending. Leaving a good impression helps reinforce your message!
  (Imagine reading a book, becoming invested in its characters, only for it to suddenly end without any clear resolution. Try not to do this to your readers.)

- Just as with the introduction, the conclusion should offer some context so that the reader appreciates the importance of the study

Creative Titles

These are defining characteristics of Astrobites posts, and an easy way to engage readers and inject some character into your writing. **Be respectful with puns / pop-culture!**

Wordplay	**Purr-suing an X-ray binary with StrayCats**
Attention-grabbing	**Table Salt detected on Europa!**
Direct question	**Was Uranus Impacted?**
Motivating question	**The Galaxy Main Sequence: What's in the Scatter?**
Descriptive	**The Origins of the Search for Extraterrestrial Intelligence**
Creative : Formal	**Cosmic Coughs: The Dust Production of Luminous Blue Variables**
Figure of speech	**Going with the Outflow**
Idiomatic	**A Disk and A Jet Walk into A Star**
Meme	**Planets go "weeee!"**
Movie reference	**Don't (Forget To) Look Up**
Music reference	**Video Did Not Kill the Radio Star**
Video game reference	**Liquid Water on Exomoons beneath Sunless Skies**
Obscure reference	**A Galactic Sirocco**

General Writing Tips

Start with an outline of your planned sections and paragraphs

Decide on the central messages / key ideas you want to convey, then base the piece around that. Maintain a good logical flow throughout your piece.

Got writer's block?
- Pick out the key figures first. These can help you plan your piece
- Come up with catchy headings, these can help guide your writing

Need inspiration?
- Read other Astrobites, or even other science blogs like Quanta

Stay true to your writing style. **Write something you'd want to read**.