

Sharing the 2020 Great Conjunction with the World

Sam MORRELL ^{*1}, Claire L. DAVIES, Matthew R. BATE, Alice MILLS, Natalie J. WHITEHEAD, Steven RIEDER, Jennifer HATCHELL, Sebastiaan KRIJT, Nathan J. MAYNE, Stephen I. THOMSON, Federica RESCIGNO, Adrien HOUGE and Christopher M. BRUNT

Abstract. On 21st December 2020, Jupiter and Saturn came closer together in the sky than they have been since 1623, appearing less than one-fifth the apparent diameter of the full Moon apart—an event known as a Great Conjunction. With a second lockdown looking imminent in the UK, and with it the impossibility of organising in-person events, the team from the University of Exeter and Exeter Science Centre in the UK innovated to communicate this event to the world. We designed and organised an online campaign, including a website for the event (<http://jupitersaturn2020.org/>), pre-event educational video content, and a live stream interleaving segments from team members and live views of the conjunction through a telescope to engage with the world. In parallel, we collaborated with Exeter-based community placemakers, Interwoven Productions CIC, to engage thousands of residents in Exeter through community-run COVID-safe star parties, an immersive play themed on Jupiter and Saturn which toured local schools, and a week-long shop front installation in the city centre featuring bespoke print and digital media themed around the event. In this proceeding, we describe how our work engaged over a million people around the world in the Great Conjunction.

1. Introduction

As a comprehensive writeup of the Great Conjunction project itself has already been published in [1], we will instead use this proceeding as an opportunity to debrief this work by exploring the data and sharing some of the key lessons it provides.

Briefly, the project consists of three segments: local, community-driven star parties and shopfront displays, pre-event content, and livestreams. The anonymised engagement data for the online segments were drawn from the YouTube Studio analytics dashboard and web server access logs. Importantly, these do not identify individual users, but can show the characteristics of our audience en-masse. The engagement for the Exeter-based segments of the project were estimated through sessions of observing people passing the shopfront display, and by counting attendees to star parties.

2. Pre-Event Engagement

In preparation for the event itself, Boo To A Goose Theatre offered to adapt their ‘Space Cats’ show, originally developed to celebrate the 50th anniversary of the Apollo 11 Moon landing. Our team acted as astronomy consultants and the adapted play toured around local schools for pupils aged 4-11 yrs. Based

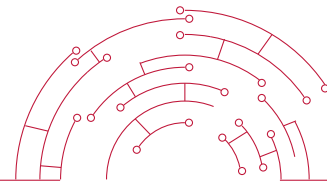
on the number of the accompanying worksheets that were distributed, we estimate that around 600 parents, guardians and educators were reached through this project.

Our team produced a series of videos for the Physics at Exeter YouTube channel¹, detailing how to see the Great Conjunction and a history of great conjunctions; introducing the Great Conjunction to kids; and how Jupiter and Saturn affected the formation of our Solar System. The latter of these, and interviews with (exo)planet climate researchers produced by our collaborators at The Exeter Science Centre, tie in with, and benefit from, the research expertise available at Exeter. In total, these videos accrued over 700,000 views, with 10 – 20 per cent of the views from each video originating outside of Europe and North America, indicating we reached a diverse international audience with this content. An important finding to highlight in our analysis is that the ‘Info for Kids’ video exhibits a fundamentally distinct/different distribution of age and gender than the others, with the gender balance of the video being equal, and the age distribution peaking around the 35 – 44 years demographic; the median age for parents of school age children in the UK [2]. Hence, we highly suggest that if you are producing outreach content for children, you also flag it as ‘Made for Kids’, as we did.

Our website, which collates all our online content, was a simple static site and was hosted using an

*1 University of Exeter
smorrell@astro.ex.ac.uk

¹<https://www.youtube.com/channel/UCX9eLLawNgedMYtYegsRqeQ>



Amazon S3 bucket. Our use of Amazon’s infrastructure meant that we could handle the over 187,000 hits, with over 53,000 of them being on the day of the event. If you anticipate similar amounts of traffic, we recommend this solution. Its simplicity and resilience make it highly dependable.

Finally, to keep our audience informed about the upcoming livestream, we setup a mailing list compliant with local data protection regulations, with a signup form hosted by Google. Although the form itself proved reliable, the emails were sent from a desktop computer using an Outlook mail merge. The final total of 8,460 submissions tripped several email quotas on the University system, making it problematic to contact all of those who had signed up in a timely manner – we would hence highly recommend procuring a dedicated mailing service for such purposes.

Pre-event, we also cooperated with the regional and national press. In total, our coverage of the Great Conjunction appeared in 189 press outlets across 33 different countries. This was valuable and aided in the international discovery of our other content; with much of the non-UK/US traffic to our videos originating from prominent features in the press in countries such as Greece, Israel, and Mongolia.

3. Engagement Concurrent with the Conjunction

Based on our monitoring of the shopfront display, we estimate that it received around 3,000 engagements throughout the week it was in situ. The nature of these engagements ranged from glances from passers-by to adults with young children stopping to guide their child through the display, and small groups of young adults (aged 16 – 30) stopping to watch the video and take photos of the displays.

Our first livestream was sadly postponed due to bad weather shortly after starting. However we did find it drove engagement to our second. Our main broadcast started at 16:15 GMT on Sunday 20th December 2020, and ran for a total of 2 hours, 8 minutes and 15 seconds. This runtime was possible thanks to having a pre-planned script that was editable in real time as circumstances changed. Throughout this period, we received a median concurrent audience of 2,929 viewers, peaking at 3,666 at around 60 minutes in. Thanks to our pre-engagement efforts, our broadcast began with nearly 750 viewers. From the start, our aim was to reach a diverse, international audience. Our analytics data shows that only around 45 per cent of our total viewership of over 305,000 are from the US/UK, with around 20 per cent coming

from outside of North America and Europe. We believe that the significance of this event in other cultures, combined with our pre-event engagement helped encourage this international audience.

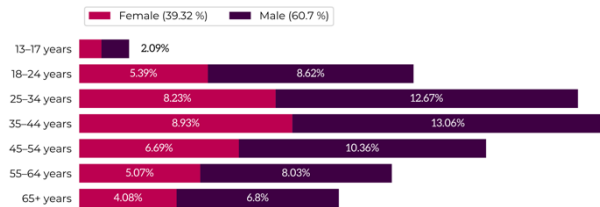


Figure 1. The breakdown of binary gender and age for our livestream, as provided by the YouTube analytics platform.

Whereas around $\frac{3}{4}$ of our pre-event video views were from males aged 40 – 60 years old, Figure 1 shows that the livestream was more balanced across both age and gender. As with the ‘Info for Kids’ video, the distribution peaks at the median UK age for parents of school-age children [2], indicating that both the engagement with schools, and the video produced for children were successful in engaging younger viewers.

4. Figures and Tables

Fig. 1. The breakdown of binary gender and age for our livestream, as provided by the YouTube analytics platform.

5. Summary

We have explored the engagement data resulting from our coverage of the 2020 Great Conjunction, sharing some of the key points that aided in our delivery of the event, as well as some of the lessons we learned along the way. Finally, 99 per cent of the 179 respondents to our post-event survey rated their overall learning experience as good or very good.

References

- [1] Davies C., 2021, “*Sharing the great conjunction*” A&G, 62, 2.29. doi:10.1093/astroge/atab056
- [2] Office for National Statistics: *Births by parents’ characteristics in England and Wales: 2016*