In the Community

In 2016, postdoctoral scholar

Pasadena chapter of Astronomy on

Tap (AoT), a national public-outreach

program in which astronomers and

and other institutions delve into the

mysteries of the cosmos and answer

planetary scientists from Caltech

audience questions over pints of

lager at a local tavern. In the last

five years, the event has taken place

But Hummels and his AoT team

wanted to do more with the program.

Because more than half of residents

in the city of Los Angeles can

speak a language other

than English, according to

U.S. Census data, Hummels

and his collaborators sought to

broaden AoT lectures to make

them accessible to speakers of

ly spoken languages other than

other tongues. The most common-

English in the L.A. area are Spanish

and Mandarin Chinese, so Hummels

more than 70 times, usually at Der

Wolf in Pasadena.

Cameron Hummels began a

Universal Languages

and graduate student Yuguang Chen began to recruit astronomy experts fluent in those languages.

Then COVID-19 changed everything. With in-person events shut down by the pandemic, the AoT team pivoted to a virtual format in which lectures were still given live but online, with recordings made available afterward. The move online not only made it possible to continue the series but also expanded its reach. Before the pandemic, 100 to 200 people attended in-person events. The live virtual events have had roughly the same number of attendees, Hummels says, but the recorded videos typically receive another 1,000 views.

"Certainly, in the last 18 months, we've seen how important science can be for everyone's well-being and life," Hummels says. "Astronomy doesn't always have the most obvious impact on our daily lives, but I think it's important to provide people with opportunities to broaden their horizons and learn about our origins, and teach critical thinking at the same time."

The unexpected change in plans also expanded the Astronomy on Tap audience beyond the Los Angeles community. When Chen organized two virtual lectures in Mandarin and hosted the events on Chinese video platforms, each talk saw around 8,000 attendees join in to learn about merging black holes and asteroids. The recordings have garnered nearly 45.000 com-

bined views.

absolutely

astonished

to see the enthusiasm among our audience," says Chen. "Thousands of people tuned in to our live events and participated in the Q&A session. It definitely encouraged us to organize more high-quality content in the

The Spanish-language events have featured researchers from Caltech and NASA discussing black holes, dark matter, and brown dwarfs (objects in between planets and stars in size). Two PhD students in astronomy and planetary sciences, Tony Rodriguez and Benjamin Idini (MS '19), have hosted these events and provide context and commentary.

"These events attempt to reach the full Spanish diaspora, with speakers from Mexico, Spain, and South America, and are timed so that all of the Americas can watch live," Hummels says.

The team plans to continue the the events and hopes to host talks four times per year in Spanish and four times in Mandarin in addition to the usual programs in English.

"We plan to achieve a balance between in-person and online events after the pandemic," says Hummels. "Online content reaches a much larger audience and is preserved for longer, but there's something special about interacting with people in an in-person intimate setting, so we'll try to have it both ways. This is all about just trying to reach more people regardless of nationality, regardless of cultural background."

- Lori Dajose

For a full list of upcoming Astronomy on Tap lectures, visit outreach. astro.caltech.edu, or follow @CaltechAstro on Facebook. Twitter, Instagram, and YouTube.

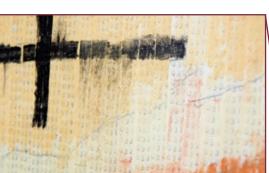
Origins

A Planet Painted by Hand

The Perseverance rover has sent more than a hundred thousand high-resolution images of the Red Planet since it landed on Mars in February 2021, which allows anyone with an internet connection to view photographs (including selfies) taken by a robot on another world. But it was not always so easy to obtain detailed images from another planet.

In 1965, the Mariner 4 mission flew by Mars and snapped 22 images of the planet using a television

camera, the first pictures of the planet taken up close. The spacecraft relayed the raw numerical data back to mission control at the Jet Propulsion Laboratory (which Caltech manages for NASA), whose

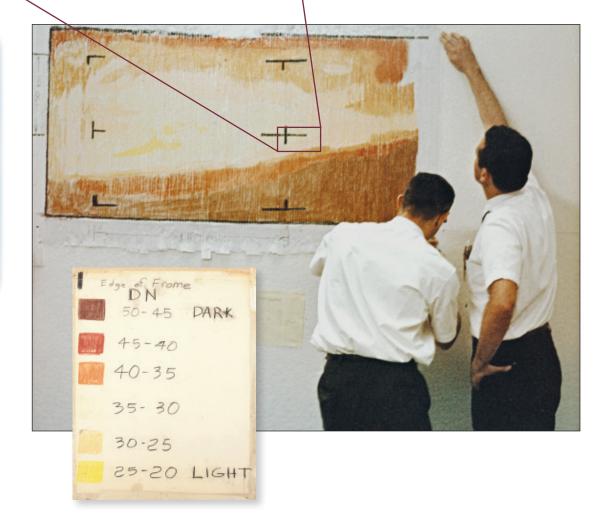


engineers could reconstruct these data into an image.

Impatient to see the official processed image, the telecommunications team rebuilt the picture themselves. They printed out the numbers on strips of paper, attached them side by side, and developed a color key that matched the numbers to their appropriate colors. They then hand-colored strips as in a paint-by-numbers image. The resulting pastel "photograph" was framed and gifted to JPL's then-director, William H. Pickering.

- Lori Dajose





Fall 2021 Caltech magazine