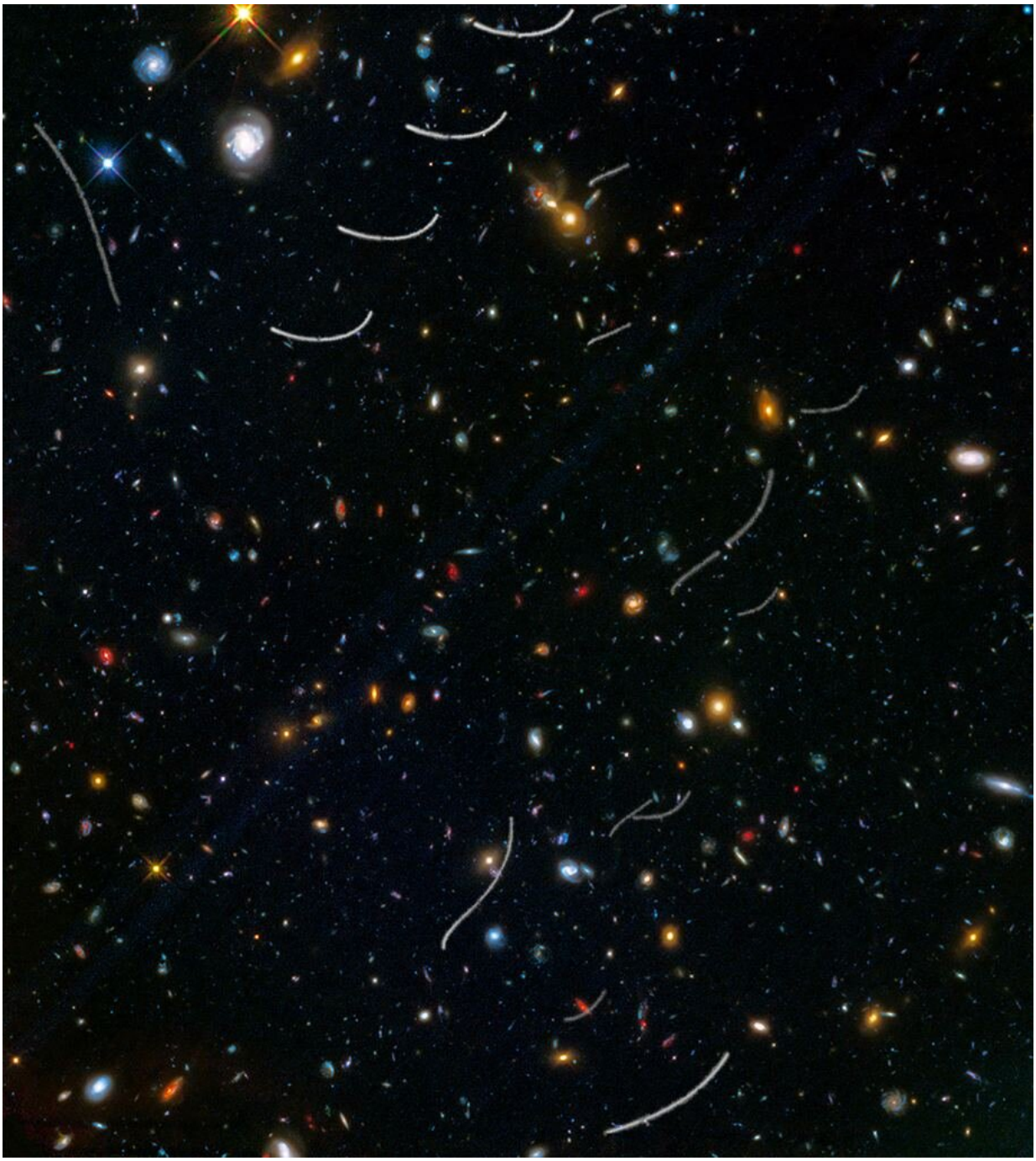
Hubble is the ultimate multitasker: Discovering asteroids while it's doing other observations

June 26 2019



Some asteroids from within our Solar System have photobombed deep images of the Universe taken by the NASA/ESA Hubble Space Telescope. The asteroidal streaks in this image are created by our virtual neighbours; asteroids in the main asteroid belt between Mars and Jupiter. In the background are thousands of colourful galaxies, some of them billions of light years away. Credit: NASA, ESA, and B. Sunnquist and J. Mack (STScI); CC BY 4.0; Acknowledgment:

NASA, ESA, and J. Lotz (STScI) and the HFF Team

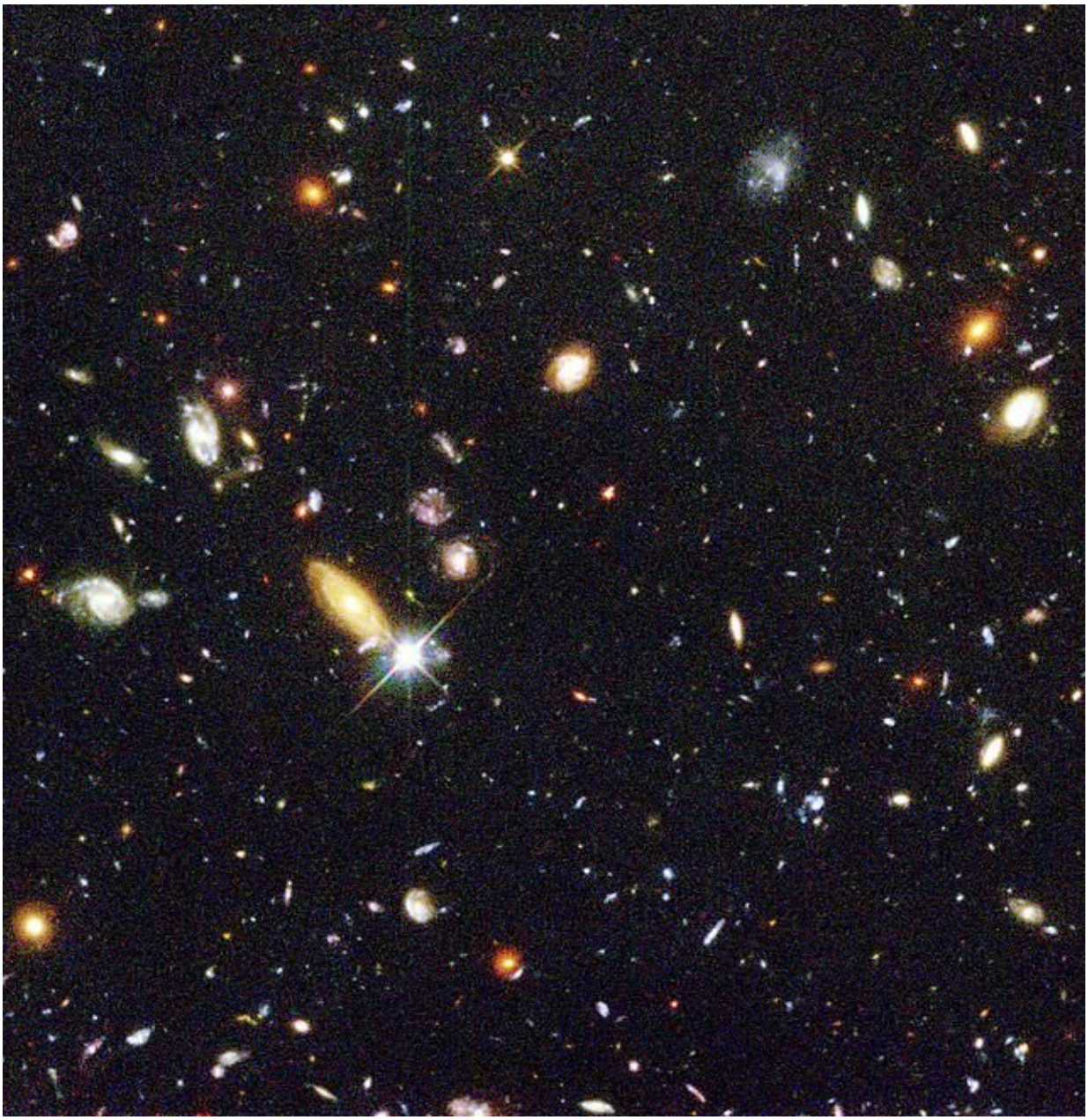
It looks like a poster of the famous Hubble Deep Field, marked with white streaks by a child, or put away carelessly and scratched in the process. But it's not. The white streaks aren't accidents; they're the paths of asteroids.

A couple years ago, the NASA/ESA Hubble Space Telescope was observing very distant galaxies, some of them billions of light years away. It was part of the Frontier Fields Project (FFP,) an ambitious observing program which aimed to observe six massive galaxy clusters. The FFP pushed Hubble to its limits.

It used the massive gravitational pull of the galaxy clusters to magnify and warp the light of even more distant galaxies behind them. The FFP brought some of the most distant galaxies ever seen into view, and set them up as follow-up targets for the James Webb Telescope.

But a funny thing happened on the way to all that ground-breaking observation: some asteroids photo-bombed the images.

The curved streaks are the paths of asteroids as they moved through the image's foreground. They appear as streaks because the image is composed of multiple Hubble images taken over time. There are 20 streaks in the image, from seven different asteroids. Five of them are newly-identified and are too faint to have been spotted before this image.



It's a little grainy by today's standards, but this image of the Hubble Deep Field is one of those iconic space images. Add a few asteroid streaks and it looks kind of like the parallel field image of Abell 370. Credit: NASA/ESA/Hubble

This image is a couple years old now, and it shows what's called the

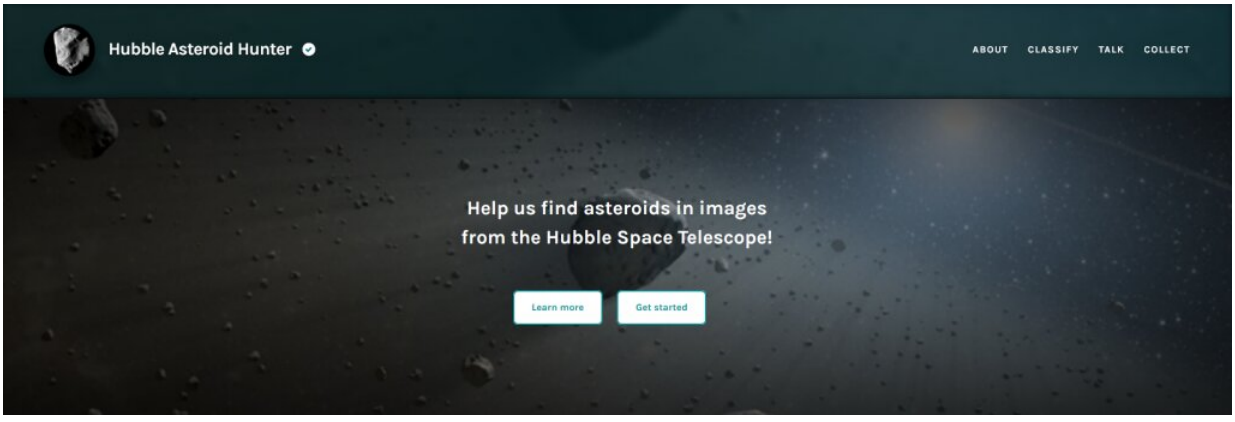
parallel field for the Abell 370 galaxy cluster, about 4 billion light years away. It's called a parallel field because of the technique used to capture it.

A press release explains parallel fields this way:

"While observing each cluster with one of the cameras on Hubble, the team also used a different camera, pointing in a slightly different direction, to photograph six so-called 'parallel fields." This maximised Hubble's observational efficiency in doing deep space exposures, imaging a myriad of far away galaxies."

The parallel field images is assembled from both optical and infrared images, and shows thousands of separate galaxies. The blue ones are spiral galaxies like our own Milky Way, and the yellow ones are elliptical galaxies. Sprinkled in the image are small blue, fragmentary galaxies. The red-hued objects are the most distant, and appear red because their light is red-shifted.

Help Astronomers Find More Asteroids!



The front page of the Hubble Asteroid Hunter project. Head over there and have

a look. Credit: Hubble Asteroid Hunter/ESA

There's a reason this image is being published by the ESA now, and it has to do with you.

Astronomers weren't looking for asteroids when they were using the Hubble for the Frontier Fields Project. The asteroids were a happy accident. But astronomers realized that if there were asteroids hidden in these images, then maybe other archival Hubble images also have asteroids hidden in them. So they thought up a way to try to find them.

They came up with a new citizen science initiative called Hubble Asteroid Hunter (HAH.) HAH is identifying archival Hubble images that are likely to contain evidence of asteroids, and inviting interested people to help find them. HAH is part of the Zooniverse citizen science project, which is the world's largest platform for citizen-powered research. (Check it out; it's amazing!)

Contributing to the world's growing body of scientific knowledge is kind of fun and rewarding. But in the case of HAH, there's possibly a more tangible outcome of your effort, if you choose to get involved. Mapping the orbits of asteroids is part of understanding our immediate surroundings in space. By doing so, you might help identify a PHO (Potentially Hazardous Object) whose orbit brings it close to Earth.

Wouldn't that feel good?

Source Universe Today

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