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New View: Universe Suddenly Twice as Bright

By Clara Moskowitz, Staff Writer
posted: 15 May 2008 12:35 p.m. ET

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The universe is twice as bright as it appears, astronomers now suggest.

The light bulb went on when they calculated that dust blocks about the half the light emitted from stars and galaxies.

Astronomers have known about interstellar dust for a while, but they haven't been able to quantify just how much light it blocks. Now a team of researchers has studied a catalogue of galaxies and found that dust shields roughly 50 percent of their light.

Dust clogs the disks of spiral galaxies, obscuring their light. When galaxies are edge-on, such as NGC 891 shown here, dust is especially prominent. Credit: C.Howk (JHU), B.Savage (U. Wisconsin), N.A.Sharp (NOAO)/WIYN/NOAO/NSF

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"I was shocked by the sheer scale of the effect," said Simon Driver, an astronomer from the University of St. Andrews in Scotland who led the study. "Most people just kind of said, 'We suspect dust is a minor problem.' I spent much of my career working on deep images from Hubble and I've always ignored dust almost entirely."

The result will likely cause many astronomers to revise their calculations of the intrinsic brightness of many celestial objects, Driver said. Until now, many astronomers thought stars and galaxies were really about 10 percent brighter in optical light than they appeared because of dust. If the new findings are true, it turns out that objects in the sky are about twice as bright than they appear.

"This is a strong, clear-cut result," Driver told *SPACE.com*. "We've really got to take dust seriously and we've got to make large adjustments to our magnitude calculations." (A magnitude scale is used to define brightness of celestial objects.)

The astronomers detailed their findings in the May 10 issue of the *Astrophysical Journal Letters*.

Interstellar dust isn't exactly the same thing that coats our bookshelves and covers our TV screens. It's made up of lumps of carbon and silicates that form dust grains only a few thousandths of a millimeter long. It hangs out in galaxies, but generally steers clear of the space between them.

To calculate dust's effect, the researchers analyzed data from the Millennium Galaxy Catalogue, a collection of images of 10,000 galaxies compiled by Driver and his team using the Isaac Newton Telescope on La Palma and others.

They counted the number of galaxies in the catalogue that were directly facing us, and compared it to the number that were tilted 90 degrees away from us. Without dust, they reasoned, they should see just about equal numbers of galaxies in each orientation. But with dust, they would likely find fewer edge-on than face-on galaxies. Since dust lies in the disks of spiral galaxies, and not the dense central bulge, when we view galaxies from the side we are looking through thicker layers of dust, so we should see less light. In fact, the researchers counted about 70 percent fewer edge-on galaxies than face-on galaxies.

They used this discrepancy to quantify dust's effect by combing their counts with a model of dust distribution in galaxies developed by Cristina Popescu of the University of Central Lancashire and Richard Tuffs of the Max Plank Institute for Nuclear Physics.

"It's been a revelation to many people in the community, but there are small groups that had a suspicion this was coming," Driver said. "I wouldn't be surprised if there's a refinement of the result, but I think the result is basically here to stay."

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The research was funded by the Science and Technology Facilities Council, the Australian Research Council, the Max-Planck Society and a Livesey award from the University of Central Lancashire.

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THEY ARGUE THAT THIS INTENSE SHEEN OWES TO REFLECTORS OF A CINEMATOGRAPHIC STUDY AND NOT WING LIGHT FROM THE SUN.
BUT THEY DON'T STUDIED IN DEPTH.
THE SHEEN THAT GRANTS THE MOON TO EVERYTHING WHAT POSED IN IT OWED PRECISELY TO THIS WONDERFUL INTERSETELLAR POWDER KNOWN AS" REGOLITO".

posted 5/15/2008 1:58:59 PM 2 Recommend | Report Abuse

John_F wrote:

This demonstrates that a significant increase should be made in the number of galaxies that exist, and the related normal matter. The "expected" but not observed galaxies are there, we just do not see them. That much more "dark matter" has been identified.

posted 5/15/2008 3:57:34 PM 2 Recommend | Report Abuse

Wild_Viking wrote:

Vorjia, your CAPS button is on. This discovery is huge. If true, wouldn't it mean that we can effectively double the visible mass in the known universe, thereby reducing the missing dark matter?

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Asemili wrote:

Would this make us revise our calculated distance between insterstellar objects - for example, is it possible that the red light shift we use to determine how far away something is would need recalulating? If so, would that mean many objects we thought where very far away could actually be much closer?

posted 5/15/2008 4:28:49 PM 7 Recommend | Report Abuse

ZenGalacticore wrote:

I'm surprised that we've missed the dust blockage of light by an estimated 40%. That's alot! In hindsight, though, I guess it should be no surprise. For decades we've seen thick, blurry dust bands in galaxies that are edge on from our line of sight and the relative brightness of face on galaxies like the Silver Dollar Galaxy. It's kind of like the scientific studies in the mid and late 20th century that proved the hazards of smoking. As early as the 1890s, people referred to cigarettes as 'coffin nails'.
Also, yes, we have every reason to believe that there are many more galaxies than we've estimated so far and that many objects may be closer than we once thought. Life is a dustbowl (lol).

posted 5/15/2008 5:22:33 PM 0 Recommend | Report Abuse

ZenGalacticore wrote:

Let me add that I personally have always believed that we live in an ultimately closed universe and that the Big Bang was not the 'beginning' but simply the latest incarnation of an infinity of bangs.

posted 5/15/2008 5:26:35 PM 1 Recommend | Report Abuse

yes_please wrote:

I agree with ZenGalacticore. Expand, collapse and repeat. Hard to imagine how long this has been happening since we don't even have a number that could represent the duration.

Imagine our universe is just a marble in a giant bag full of marbles. How insignificant do you feel know? Maybe that petty issue that is consuming you no longer matters that much.

posted 5/15/2008 7:08:26 PM 1 Recommend | Report Abuse

fedeykin wrote:

what if when the universe collapses on itself it is at the same time expanding into a different version of itself, like an anti-universe.

or what if the expansion of the universe observed by scientists is just an illusion? was the big bang an explosion that occured like an infinite field with an infinite amount of mines exploding all at the same time. which would make the universe completely infinate, but still have the perception of

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mindopener9 wrote:

Thia changes everything!!!!!! Gravity, intrinsic brightness estimates, Cepheid variable values, Redshift estimates, of Dark Matter is now 30 percent or less, I suspect it doesn't exist. Dark energy may evaporate, as well, because the estimate of its value is only based on the supposed acceleration of the expansion of the Universe. What if most of the Redshift is due to cosmic dust? Throw out your Cosmology textbooks, ladies & gentlemen, they are now worthless and outdated!!!!! I am so HAPPY!!!!!!

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