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New View: Universe Suddenly Twice as Bright
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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 team of researchers has studied a catalogue of galaxies and found that **dus** **(http://www.space.com/scienceastronomy/dust_storm_030814.html)** shields roughly 50 percent of their light.

"I was shocked by the sheer scale of the effect," said Simon Driver, an astronomer from the University of St. Andrews in S 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 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 about 10 percent brighter in optical light than they appeared because of du 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 scal 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 (http://www.space.com/scienceastronomy/blackhole_vlt_040507.h coats our bookshelves and covers our TV screens. It's made up of lumps of carbon and silicates that form dust gr 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 g compiled by Driver and his team using the Isaac Newton Telescope on La 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 ab equal numbers of galaxies in each orientation. But with dust, they would li find fewer edge-on than face-on galaxies. Since dust lies in the disks of spiral galaxies, and not the dense central **bulge (http://www.space.com/scienceastronomy/astronomy/galaxy_bulge_01** when we view galaxies from the side we are looking through thicker layers 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 develop Cristina Popescu of the University of Central Lancashire and Richard Tuff 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."

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

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