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Wishing upon a star has never been easier

LOS ANGELES: There may be three times as many stars in the universe as we thought. Previous counts relied on the assumption that the larger universe looks much like our own galaxy. But authors of a report published in *Nature* say there are many more red dwarfs – small, dim stars that cannot be picked out individually when very far off – in galaxies beyond the Milky Way.

The new census, based on analysis of the light signature of the galaxies using instruments at the Keck Observatory in Hawaii, pushes the total number of stars in the universe to 300 sextillion (that's a 3 with 23 zeros after it).

Red dwarfs can be a mere 10 to 20 per cent the mass of the Sun, and hundreds of times dimmer. That makes them so faint as to be undetectable at great distances. To make up for what they could not see, astronomers for decades have assumed that the proportion of red dwarfs in other galaxies would be similar to the ratio known to exist in our own, said Yale University astronomer Pieter van Dokkum, the study's lead author. Armed with recent advances that enabled them to better detect the faint signals of dim, low-mass stars, Dr van

Dokkum and co-worker Charlie Conroy of the Harvard-Smithsonian Centre for Astrophysics looked at the radiation emanating from eight elliptical galaxies between 50 million and 300 million light years from Earth.

The scientists looked at the light given off by these galaxies to determine what chemicals were present and in what amounts – revealing what kinds of stars they came from. They found strong signs of sodium and iron, which are typically found in feeble, low-mass stars. They calculated that the strength of the sodium and iron signatures was enough to raise the red dwarf estimate within these galaxies by a factor of nine.

If that calculation holds for all elliptical galaxies – one-third of all known galaxies – that would triple the star census of the universe. Should future studies confirm the findings, astronomers may need to rejig all kinds of basic numbers. Among them: stars and galaxies may grow differently than scientists believed, and there may be slightly less dark matter in the centres of these galaxies than had been predicted.

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