

Astro scientists dig deep to unravel dark matter matrix

Tech can crack 'cosmic web'



AFP
CHICAGO

SCIENTISTS believe that a quantum leap in computing power and the development of powerful new telescopes will soon unravel the 'cosmic web,' a theory by which the universe is bound by invisible threads of 'dark matter'.

In a series of articles in Friday's edition of *Science Magazine*, leading astrophysicists explain how new technologies and experiments being launched in the coming years will open a new window into the origins and complexities of the universe. Current tools have granted a rough picture of how the universe was born out of the Big Bang and is held together by the gravitational pull of mysterious 'dark matter.'

But they are not precise enough to truly map the cosmic web, which is said to hold together the 100 billion bright galaxies in the known universe, or reveal details like how galaxies form and interact. Several upcoming projects will help change that, the authors argue.

"We are on the verge of making tremendous progress thanks to the new observatories (being planned) theoretical progress being made and the advances in super computing," explained Harvard University's Claude-Andre Faucher-Giguere, lead author on one of the articles. When new projects come on line, astrophysicists will be able to use radio waves to look back in time for a picture of the dark days of the universe before the stars and planets emerged.

Young star holds key to stellar birth

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PARIS

ASTRONOMERS poring over a young star 180 light years from the Earth have found evidence that stellar birth can lead to the formation of a planet only millions of years later, a mere blink on the cosmic timescale.

The mainstream theory is that planets are forged from a disc of gas and dusty debris that is left over from the creation of a star. How long this process takes is a matter of debate, though.

The Earth is believed to be about 4.5 billion years old, and the Sun around 100 million years older.

But observations of some exoplanets, planets in solar systems other than our own, suggest the timescale could be much shorter, especially when it comes to the formation of gas giants rather than rocky planets like Earth.

A team led by Johnny Setiawan, an Indonesia-born astronomer at the Max Planck Institute in Heidelberg, Germany, found a massive gas giant, between 5.5 and 13.1 times the size of Jupiter, orbiting within the dust disc of a well-studied star called TW Hydrae.

It takes a mere three and a half Earth days to zip around the star, at a distance of just 6,00,000 kms.

Light from the star suggests that it is between only eight and 10 million years old, which implies that planets can form even before the disc has been dissipated by stellar particles and radiation. Exoplanets were first spotted in 1995.

So far, 270 of them have been spotted, according to the *Extrasolar Planets Encyclopaedia*.

