Sign in · Register

Go to: Guardian Unlimited hom | Go

Guardian Unlimited

Read today's paper · Jobs

Search: Go

Guardian Unlimited Web

GuardianUnlimited science

Home Bad science Technology Talk This week Podcasts Environment

Search this site

Go

Five billion years on ... disaster awaits

· Astronomers foresee end of our solar system
· White dwarf contains an apocalyptic warning

Alok Jha, science correspondent
Friday December 22, 2006
The Guardian

Astronomers have captured a vision of the cataclysmic fate which awaits our solar system in about five billion years' time. Observation of a star system some 450m light years from Earth has revealed all that remains of a planetary system located around a star that was once eight times the size of our Sun.

Scientists have discovered a lonely dwarf star orbited by a small ring of metallic gas. The white dwarf is now a hundred times smaller than our Sun, burning with a surface temperature 22,000C.

"It's giving a glimpse of our future," said Tom Marsh, a physicist at the University of Warwick, writing today in Science.

The same fate awaits our Sun. As its hydrogen fuel runs out the Sun will eventually swell to 200 times its present size into a red giant.

At this stage it will destroy the inner planets, Mercury and Venus, and push the remaining planets and asteroids further out. Eventually the red giant will contract into the smaller, more dense, white dwarf.

The findings led Professor Marsh's team to speculate that the white dwarf system was a snapshot of how our own solar system would evolve. In five to eight billion years' time, when our Sun becomes a white dwarf, there will be no inner planets left and the space around the Sun will be left much emptier than it is now.

Asteroids, however, could be knocked towards the star by the large planets, such as Jupiter, that will survive much further away.

Unless humans manage to leave our planet, however, no one will be alive to see the rare rings of metal around our white dwarf Sun.

"The Earth would be extremely singed - the oceans will boil dry and we'll be left with a rather unpleasant rock," said Prof Marsh.

"If it doesn't manage to escape the red giant, it would go inside the envelope and be evaporated in the star itself."

White dwarfs often exist by themselves in the galaxy and are often orbited by clouds of gas. What makes the new discovery rare is that its disc of gas contains no hydrogen or helium, the two gases that make up more than 99% of the universe. The only elements scientists spotted were calcium, iron and magnesium - which imply the ring was not simply a cloud of interstellar gas.

Jobs from our site

- : AGM, Milton Keynes, Authentic Italian Restaurant, 21-23k, new s
- Homerton University Hospital NHS Foundation Trust: Outreach Midwife to work with vulnerable women (Band 7) - Neighbourhood Renewal Project
- INTELLIGENT RESOURCES: Senior Publishing Editor, Earth Sciences

Search all jobs

Prof Marsh said the disc was likely to be the remains of a passing asteroid. In addition, astronomers were surprised at how close the ring of metallic gas was to the white dwarf; usually, nothing gets so close to such massive objects.

He said the evidence all pointed to a large, unseen planet lurking further out in the star system of the white dwarf.

Special report
Space exploration

Interactive guides
Space exploration: interactive guides

Net notes
12.04.2001: Yuri Gagarin
22.03.2001: Mir space station

Useful links
The Planetary Society
Nasa Watch (not a Nasa site)
Space.com
Houston Space Chronicle
Encyclopedia Astronautica
Nasa homepage
Welcome to the Nasa Web
Nasa Human Spaceflight (shuttle homepage)
Kennedy Space Center
Galileo: journey to Jupiter
Nasa's Mars Exploration Rover Mission
European Space Agency
United Nations Office for Outer Space Affairs
British National Space Centre
Search for Extraterrestrial Intelligence (SETI)

Advertiser links

DirectLine Home Insurance
Our biggest deal ever is now on for a limited time only.
directline.com

Home insurance
Compare home insurance online, quote from all major insurer,...
insuremyhouse.co.uk

Your-finance.biz - House insurance
Looking to insure your house? Compare and apply online...
your-finance.biz

Christmas Gifts | **Digital TV** | **Football** | **Christmas Holiday** | **Broadband**

Printable version | Send it to a friend | Save story

Daily sections
Weekly sections

Guardian Unlimited © Guardian News and Media Limited 2006