Is there anybody out there? On the quest for extraterrestrial life

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Leiden Professor of Astronomy Mike Garrett is searching for signs of extraterrestrial intelligence. In his Kaiser lecture on 23 April he will discuss how far science has progressed in this quest.

Technology still not advanced enough

From the simplistic viewpoint of the astronomer or physicist, the Milky Way should be teeming with life, according to Leiden Professor by Special Appointment Mike Garrett. "The fact that no evidence has yet been found for advanced civilisations raises some difficult questions about our understanding of the evolution of intelligent life in the cosmos. We don't yet have the technology to trace civilisations like our own, not even if they are on our very - astronomical - doorstep."

Stepping up the quest

That crucial technology is developing fast. In recent years the search for extraterrestrial intelligence has been stepped up and the number of scientific articles on the subject is increasingly rapidly. Over the coming years, Russian milllionaire Yuri Milner will be pumping 100 million dollars into SETI research (Search for Extraterrestrial Intelligence). Garrett is a member of the advisory council of Milner's "Breakthrough Listen project".

Special star discovered

In his lecture Garret will give examples of various SETI studies in the world and how advanced intelligences could manifest themselves in astronomical observations. With the help of NASA's Kepler telescope, scientists discovered in 2015 a remarkable light curve around a special star. The find generated a lot of excitement, but so far no clear evidence has been found for advanced civilisations in our local universe, according to Garrett.

Energy-hungry civilisations

Garrett is currently the only Leiden scientist looking for extraterrestrial intelligent life, in the form of evidence for advanced civilisations. How does he do that? "We suspect that such civilisations would consume a lot of energy, which must have a visible effect on the observable characteristics of their host galaxies. A surfeit of infrared emissions in relation to their radio emissions could be a sign of an advanced civilisation. My research has shown that there do not appear to be any such energy-hungry civilisations in our 'local' universe."

Algorhythms to trace deviations

Garrettt is also Director of Astron, the Netherlands Institute for Radio Astronomy. Astron and a number of partners developed the world's biggest radio telescope, the LOFAR network, that has a base in the Netherlands and antennae in different European countries. Astron is also involved in the development of a new generation of radio telescopes that will be constructed in Australia and South Africa. Garreett develops algorhythms that can trace discrepancies in large amounts of data.

Exoplanets

Aq number of Leiden astronomers are conducting research on the

atmosphere of exoplanets that orbit around other stars than our Sun. The ultimate aim of Professor Ignas Snellen and other researchers is to detect ozone and oxygen in the atmosphere of exoplanets located in the 'habitable zone' of the star. Oxygen and ozone could be a strong indication of life, but it's very difficult to actually detect them. A new generation of telescopes will be built over the coming years that we badly need to be able to carry out this research. according to Garrett.

Provided by Leiden University

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