

50th IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) –
The Next Steps (A4)
SETI 2: SETI and Society (2)

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RADIO BRIDGES OF THE FUTURE BETWEEN SOLAR SYSTEM AND THE NEAREST 100 STARS

Abstract

The Solar Gravitational Lens (SGL) is a gift of nature that Humanity is now ready to exploit. Though SGL physics started with Einstein's 1936 paper on the gravitational lensing provided by every star, it was not until 1979 that the idea of a space mission reaching the Sun's nearest focal sphere at 550 Astronomical Units (AU) was put forward by Von Eshleman. By 1998 the senior author of this paper (CM) had published his first technical book on the FOCAL (Fast Outgoing Cyclopean Astronomical Lens) space mission: "The Sun as a Gravitational Lens: Proposed Space Missions" (ISBN 1-880930-10-2) and by 2000 he had submitted a relevant formal proposal to ESA. He presented his ideas at NASA-JPL for the first time on August 18, 1999: Claudio Maccone - The Sun's Gravity lens and its use for Interstellar Exploration - YouTube and by 2009 he had published his book "Deep Space Flight and Communications – Exploiting the Sun as a Gravitational Lens", that was translated into Chinese by 2014 and finally awarded the IAA Book Award in 2018 Claudio Maccone - Speech at IAA Dinner in Paris on March 26 2019 - YouTube. In 2020 NASA awarded a \$2million grant to JPL to prepare for the first FOCAL space mission.

But **radio bridges** between the Sun and any nearby star may also be conceived: Claudio Maccone: Breakthrough Discuss 2016 – FOCAL Missions to 550 AU Insuring Interstellar LINKS - YouTube. The idea is that, if Humanity will be able to send unmanned space probes to the nearest stars in the future, each of these probes could be placed behind the star of arrival and along the star-Sun line, thus allowing for TWO gravitational lenses to work together. That will result in a permanent communication system with much REDUCED POWERS to keep the radio link between the two stellar systems: a veritable Galactic Internet.

In this paper, we study for the first time the **100 radio bridges** between the Sun and each of the nearest 100 stars in the Galaxy. Of course, this work is for the centuries to come. But knowing which natural radio bridge between the Sun and each of the nearest 100 stars is MORE CONVENIENT, will open the ROAD MAP for the HUMAN EXPANSION into the Galaxy.