AU-Communicator: how humanity will build an instant galactic communication network

Author: Dmitry Eduardovich Yashchenko
Svobodny, Amur Region, Russia
02 February 2026

Humanity is on the verge of going beyond the solar System. But classical radio communication has already exhausted itself: delays in years, negligible bandwidth and huge energy costs make it unsuitable for a real interstellar civilization.

The AU communicator is a fundamentally new communication system that uses the correlation properties of space-time (AU-band). It allows you to transmit data almost instantly over galactic distances at terabit and even exabit speeds.

General architecture of the AU network

The AU network is structured hierarchically, from planetary hubs to intergalactic channels:

- **Level 0**-Planetary Hubs (Earth, Mars and future colonies)
- **Level 1**-Solar System (SolarNet-AU)
- **Level 2**-local stars (up to 100 light-years)
- **Level 3**-sector networks (100-10, 000 holy years)
- **Level 4**-Galactic Network (Milky Way)
- **Level 5**-Intergalactic Channels

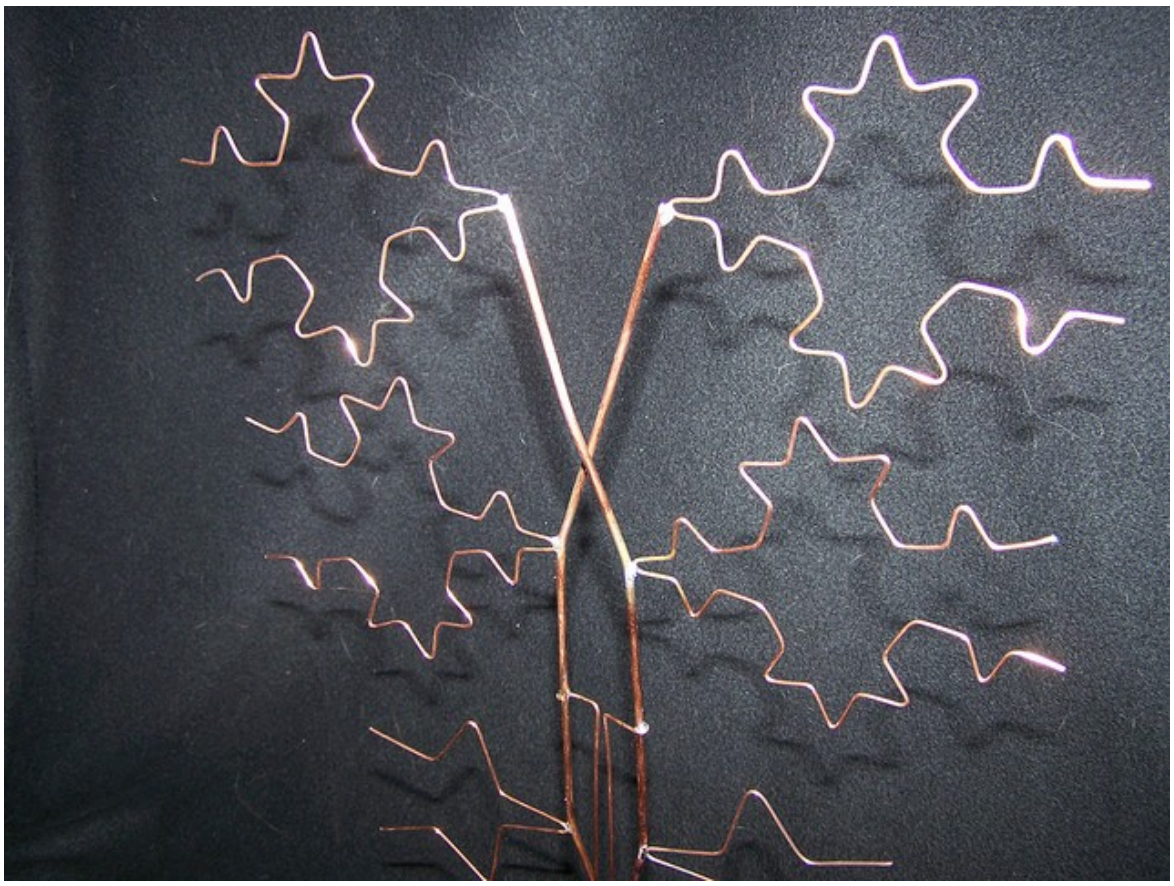
It's not just a communication network. This **is the nervous system** of a future interstellar civilization.

Detailed diagram of the AU communicator

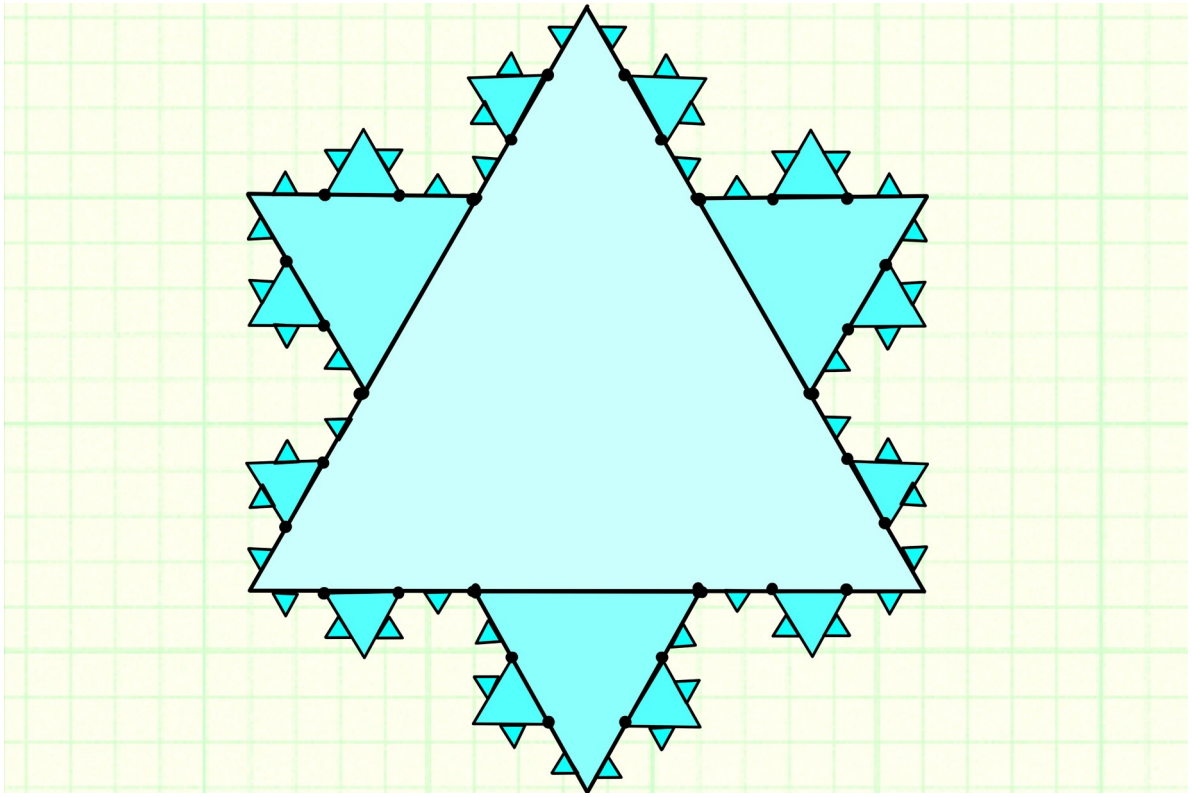
Each node of the network is a powerful autonomous complex consisting of three main modules.

Module 1: Antenna system

The correlation antenna is made in the form of a fractal structure (koch-snowflake of the 4th order) with a diameter of 10 meters. The material is a superconducting YBCO + graphene nanocomposite with an active layer of NV centers in diamond (density 1012 centers / m2).



makezine.com



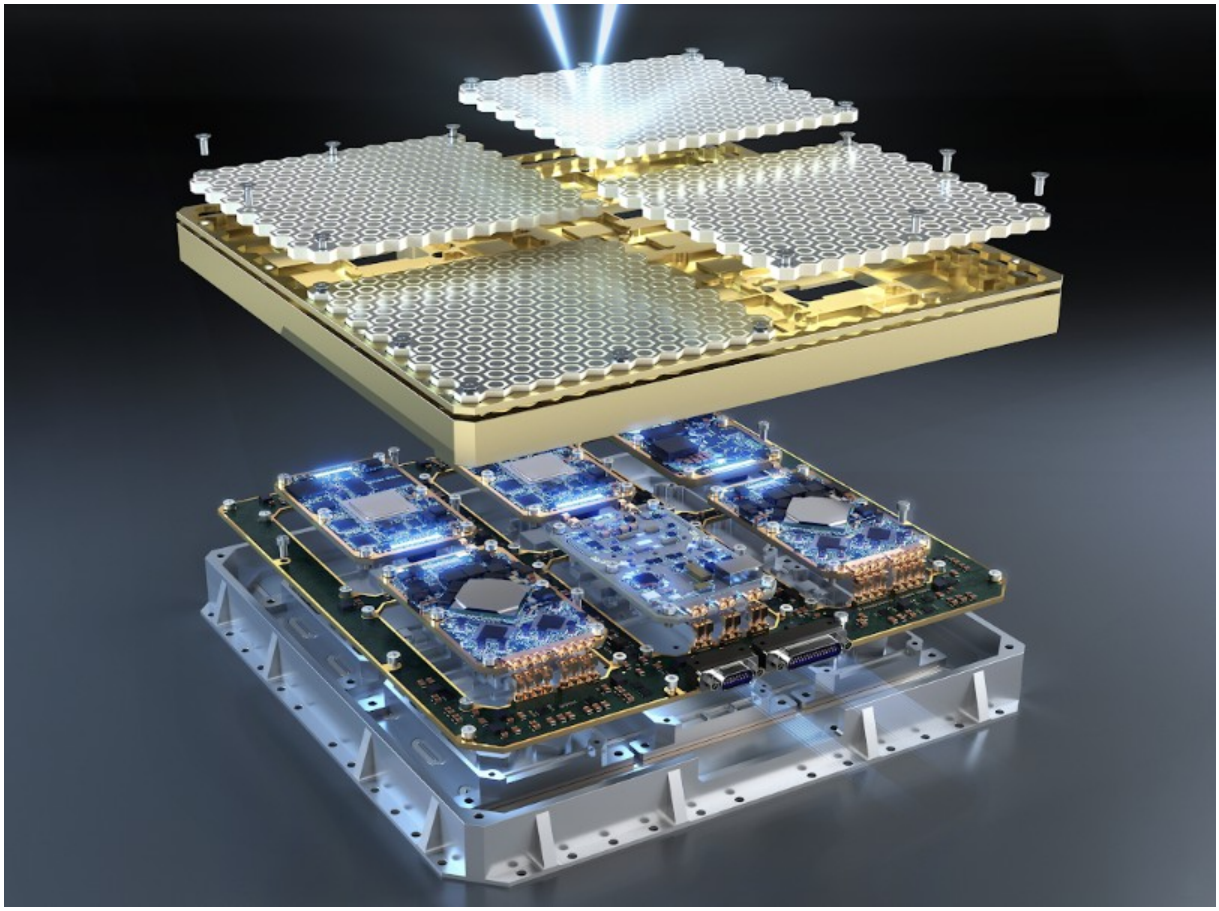
today.uconn.edu

Technical Specifications:

- Frequency range: 10 - ^{6} to 103 Hz (9 decades)
- Sensitivity: 10-23 W / √Hz @ 1 Hz

- Effective area: 78.5 m2
- Operating temperature: 4 K (cryogenics up to 100 mK)

It is complemented by a **phased array** of 1024 mini-antennas with digital beamforming and full coverage of 4π steradians in less than 1 ms.



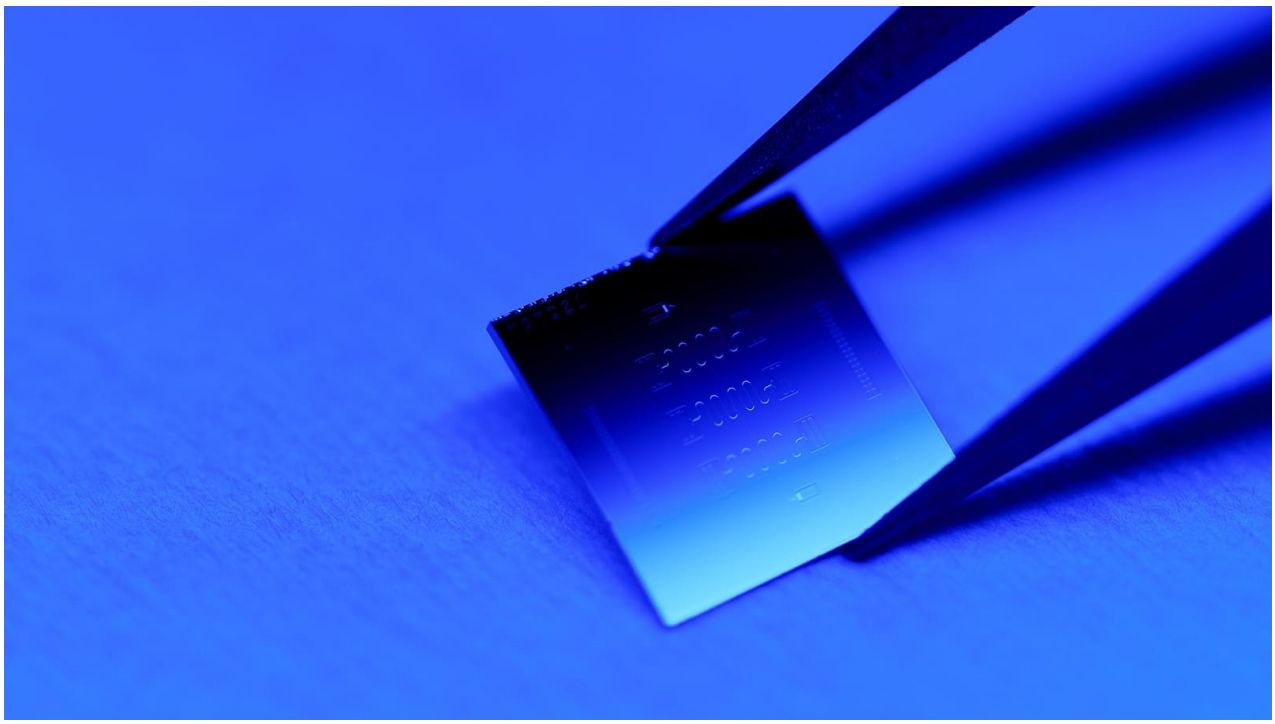
payloadspace.com
Steering the Future with Active Phased Arrays

Module 2: Transmit-receive path

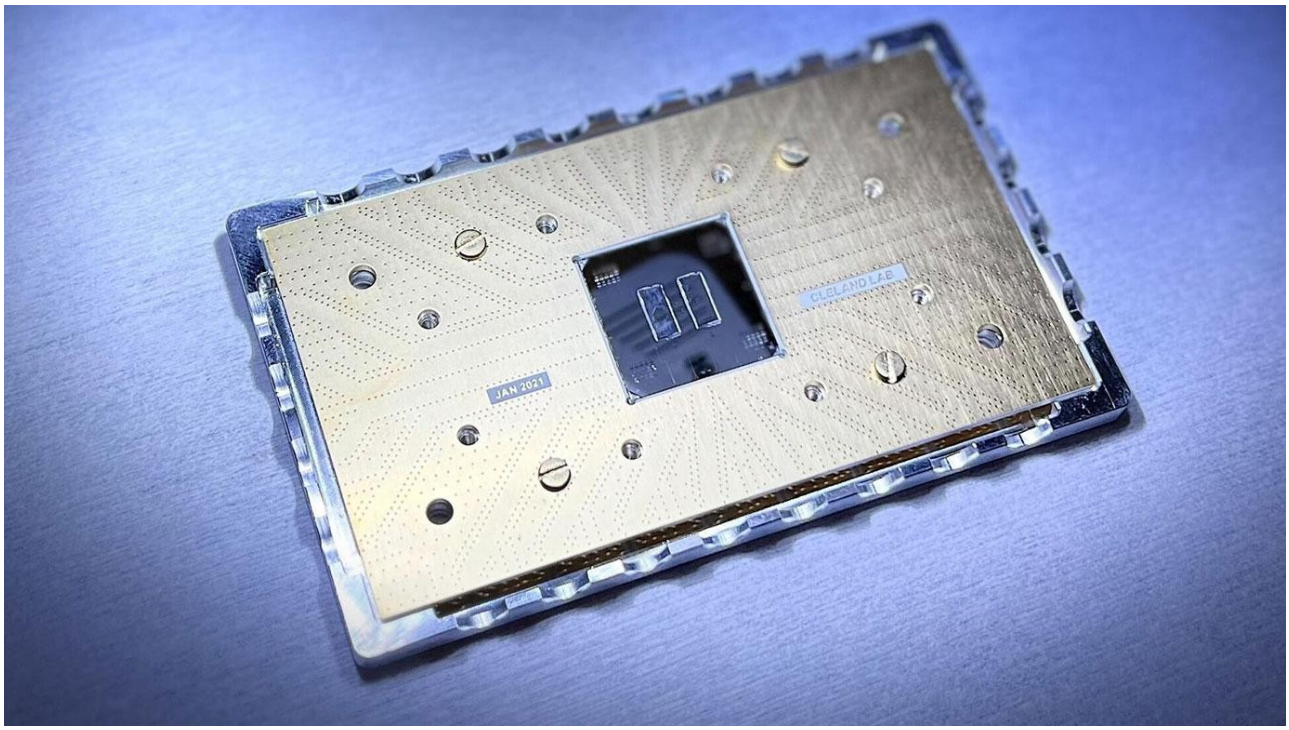
The heart of the system is **a parametric Josephson amplifier** with a noise temperature of only 0.5 K (quantum limit) and **an AU demodulator**using:

- Phase Shift keying (PSK) up to 8 bits / character
- QAM up to 16 bits / character
- OFDM with 1024 subcarriers
- Correlation coding based on C_mv patterns

Signal processing takes place on **a hybrid quantum processor** (1000 qubits + 10 classical cores) with a performance of 101 operations per second.



engineering.princeton.edu



news.uchicago.edu

Module 3: Control and Power supply

- Quantum neuromorphic processor with 1 petabyte of superconducting memory
- The main energy source is a compact nuclear reactor (1 MW of electrical power)
- Autonomy — more than 50 years

Data transfer Parameters

For short distances (< 1 sv. year), the speed reaches **1 exabit / s** (10^{18} bps).
At interstellar distances (> 10 sv. years) - up **to 1 petabit / s —**.

Here is a real calculation of the communication budget for the Sun-Alpha Centauri line (4.24 sv. years):

$Pr=Pt \cdot Gt \cdot Gr \cdot (\lambda 4\pi R)2 \cdot e-\alpha R \cdot \eta AU$ $P_r = P_t \cdot G_t \cdot G_r \cdot \left(\frac{\lambda}{4\pi R}\right)^2 \cdot e^{-\alpha R} \cdot \eta_{AU}$ $Pr=Pt \cdot Gt \cdot Gr \cdot (4\pi R\lambda)2 \cdot e-\alpha R \cdot \eta AU$

With a transmitter power of 1 MW, a gain of 101^0, and an AU medium efficiency of n_AU = 0.5, we obtain a receiver power of ~2.25 × 10 - ^{9} W. With a receiver sensitivity of 10-23 W, the signal-to-noise ratio is **2.25 × 101^4** — an excellent result even at interstellar distances.

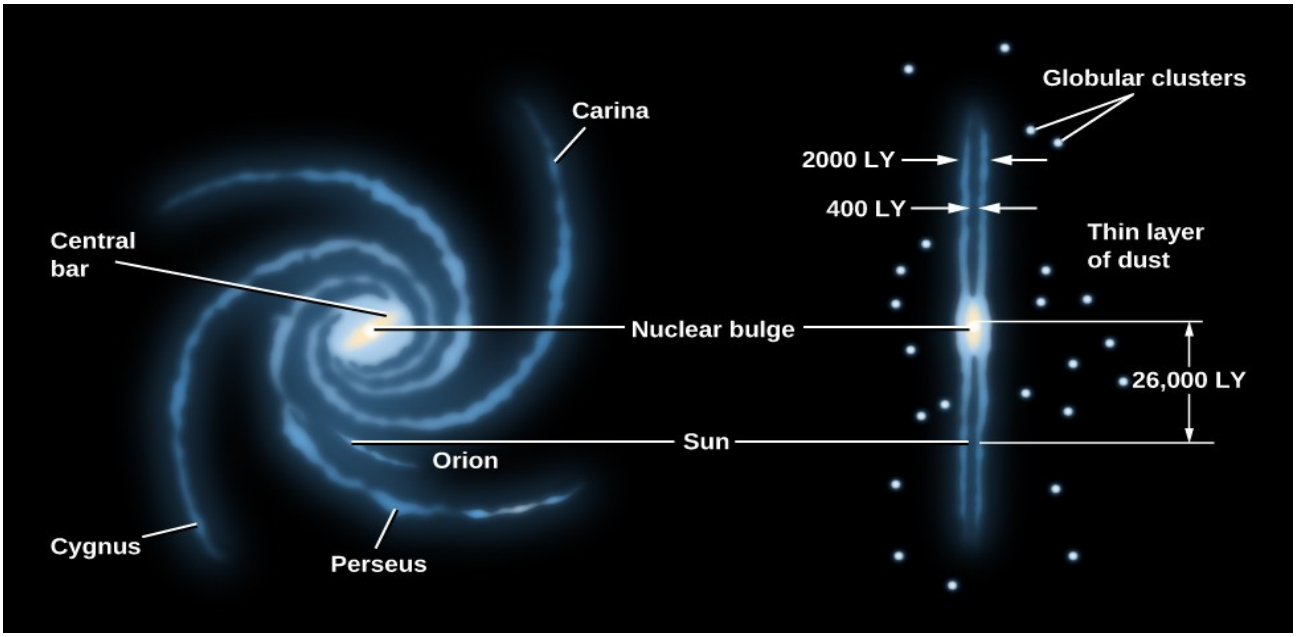
Global AU network structure

EarthAU - Net — 12 stations around the world (Tromso, Atacama, Perth, Tibet, etc.), each with triple redundancy.

SolarNet-AU - stations at Lagrange points, in the Kuiper Belt, and in planetary orbits. Interplanetary highways provide throughput of up to 102bps.

LocalStars-AU - already covers Proxima Centauri, TRAPPIST-1, and ~50 other systems within a 20-light-year radius.

GalacticAU-Net uses the Milky Way's spiral arms as natural highways, and Sagittarius A* at the center of the Galaxy as a super-hub.



courses.lumenlearning.com

medium.com

Protocols, security, and evolution

The AU network has its own 7-level protocol stack, where the top level works directly with thought forms and holograms. Routing takes into account correlation field gradients (AU-OSPF), and security is provided by quantum key distribution and AU-correlation encryption.

Deployment steps:

- 2025-2030-laboratory prototypes
- 2030-2040-Earth Network
- 2040-2060-Solar System
- 2060-2100-nearest stars
- 2100-2200-sector networks
- 2200+ — full-fledged Galactic network

Why this is important

The AU network is not just "fast internet in space". These are:

- Instant access to data from across the Galaxy
- Real time for collaborative research and colony management
- Cultural and scientific exchange with potential extraterrestrial civilizations
- Protecting humanity as a single species on a galactic level

Conclusion:
The AU communicator transforms space from a barrier to a resource. The distance ceases to exist. Humanity is moving from an era of disjointed planets to a single galactic civilization.

Ready to build the future together?

Author's contacts:
yashchenko.dmitry@gmail.com
me@liberurban.ru
X: @graviton2011