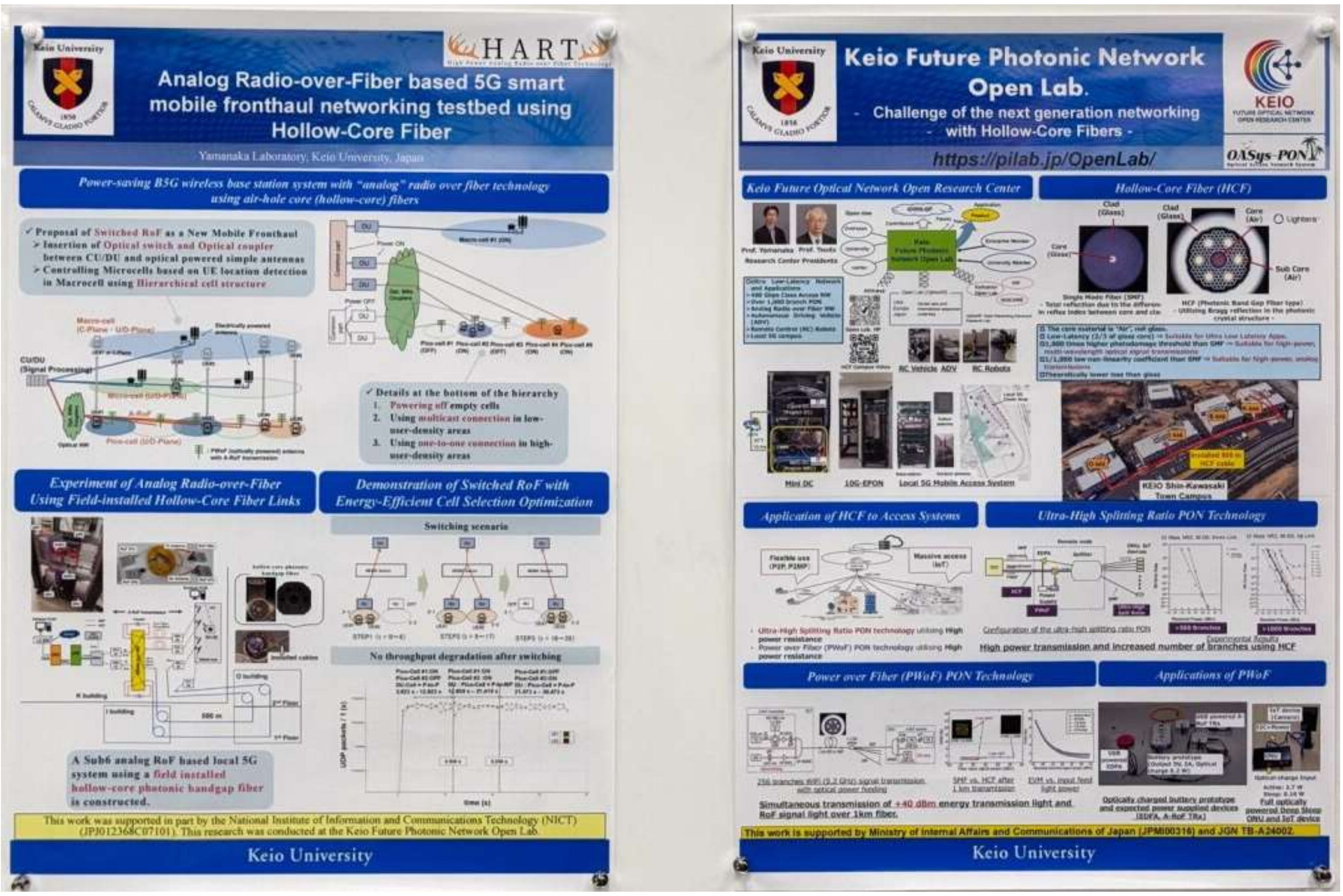
Poster and Demonstration (GJWS7-PD1)

Keio Future Photonic Network Open Lab.

Naoaki Yamanaka, Koichi Adachi, Hiroyuki Tsuda and Satoru Okamoto (KeioUniv)

Keio University has established the Future Photonic Open Research Center to pursue optical technology research through open innovation. Hollowcore fiber has been deployed across Keio's campuses, enabling collaborative researchers to utilize it together. Hollowcore fiber not only transmits data at speeds 1/3 times faster than conventional fiber and carries 1,000 times more energy, but also exhibits low nonlinearity and supports Anrog Radio over fiber (RoF.) In the booth, we will show new ONU(User access box) which has power over fiber interface without AC power supply. And also RoF demonstration will show by video. This makes it a major breakthrough for 6G.



Poster and Demonstration (GJWS7-PD2)

Scaling Optical Testbed Data Space for Data Sharing Across Vendor and Organizational Boundaries

Angela Mitrovska(1, 2); Yusuke Hirota(3); Vignesh Karunakaran(4); Sugang Xu(3); Taiga Suzuki(3); Aydin Jafari(1); Nikhil Dsilva(4); Behnam Shariati(1); Yuki Yoshida(3); Achim Autenrieth(4); Pooyan Safari(1); Johannes Fischer(1); Ronald Freund(1, 2); Yoshinari Awaji(3);

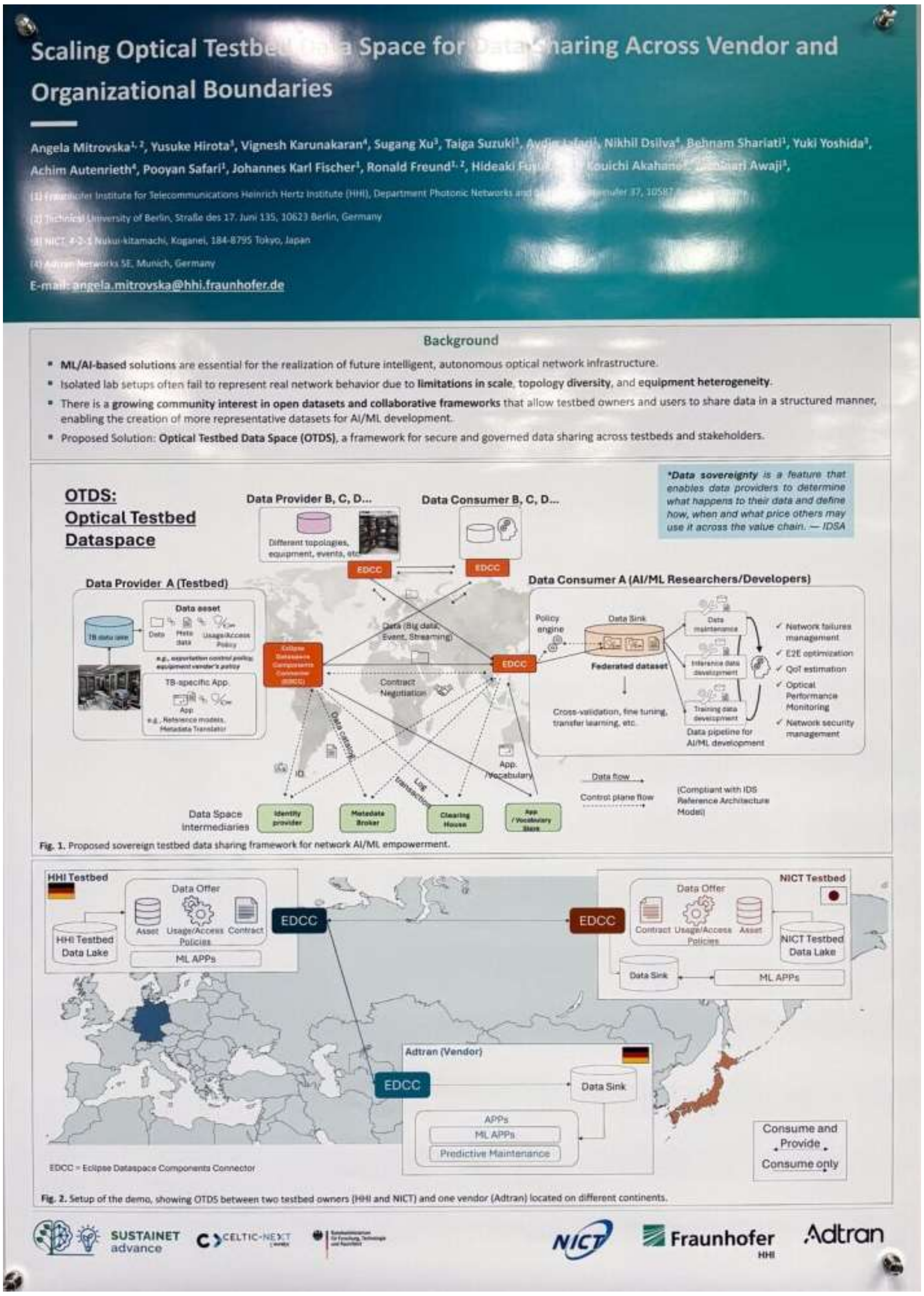
1. Fraunhofer-Institut fur Nachrichtentechnik Heinrich-Hertz-Institut HHI, Berlin, BE, Germany.

2. Technische Universitat Berlin, Berlin, BE, Germany.

3. National Inst of Information & Comm Tech, TOKYO, Koganei, Japan.

4. Adtran Networks SE, Martinsried, BY, Germany.

We demonstrate a data-sharing platform enabling on-demand sovereign data exchange across optical testbeds and system vendors to support ML development and predictive maintenance, through advanced vendor-, anonymization- and purpose-based governance controls.

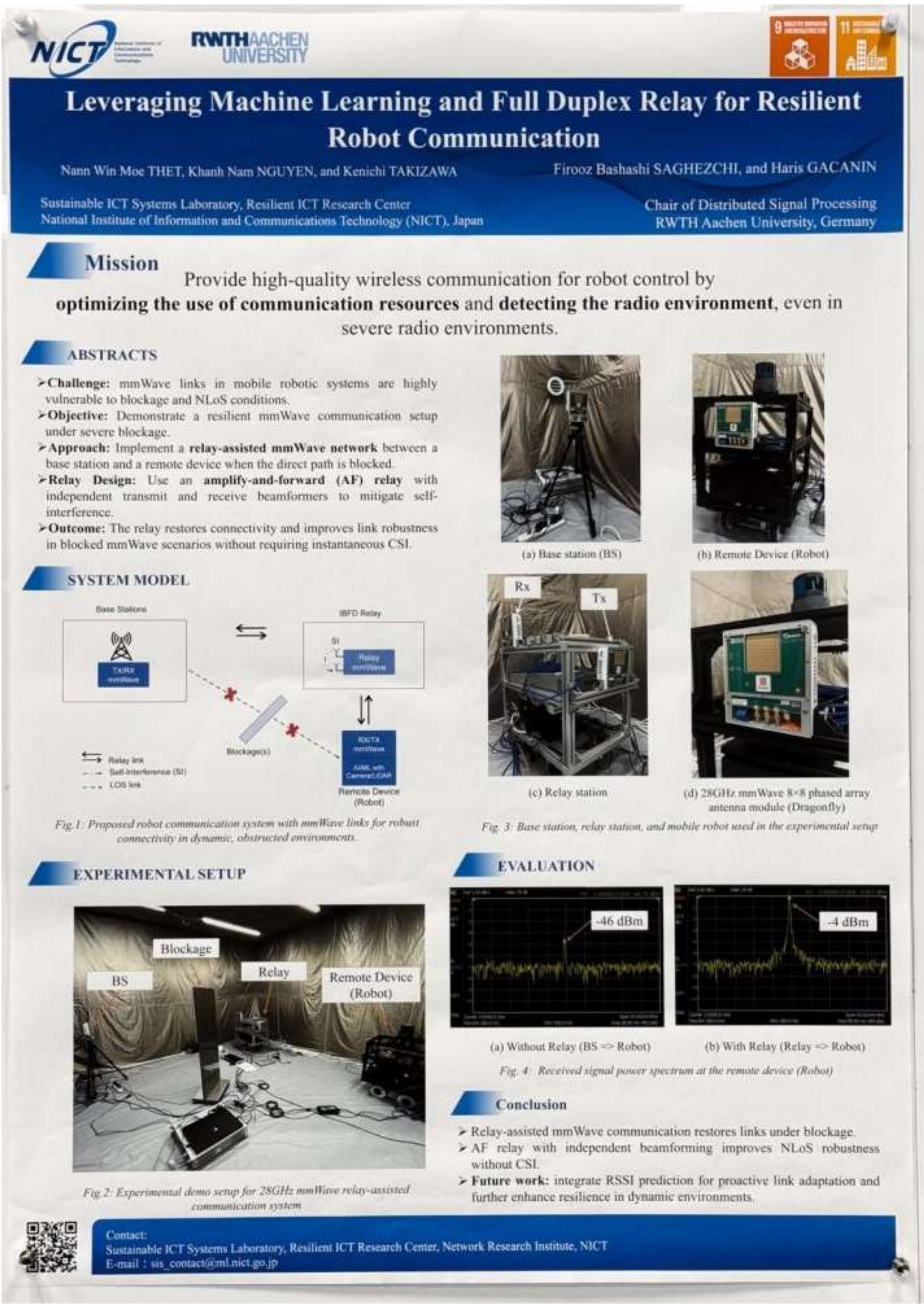


Poster and Demonstration (GJWS7-PD3)

Resilient Relay-Assisted mmWave Communication for Mobile Robots with ML-Based RSSI Prediction

Nguyen Nam Khanh, Nann Win Moe Thet, Kenichi Takizawa, and Haris GACANIN (RWTH Aachen University), Firooz Bashashi Saghezchi (RWTH Aachen University)

Millimeter-wave (mmWave) communication is particularly vulnerable to blockage, posing a significant challenge to maintaining reliable connectivity in mobile robotic systems under severe channel environments. This work presents a resilient relay-assisted mmWave communication framework that leverages machine learning (ML)-based received signal strength indicator (RSSI) prediction with environment awareness at the robot to enable proactive link adaptation. As the robot moves, future RSSI values are predicted to anticipate channel degradation and non-line-of-sight (NLoS) conditions. When the RSSI of the current connection is predicted to be weak, communication switches to an amplify-and-forward (AF) relay with independent transmit and receive beamformers to mitigate self-interference; otherwise, direct transmission is maintained. The proposed approach eliminates the need for instantaneous channel state information, enabling low-complexity and fast adaptation in dynamic environments.

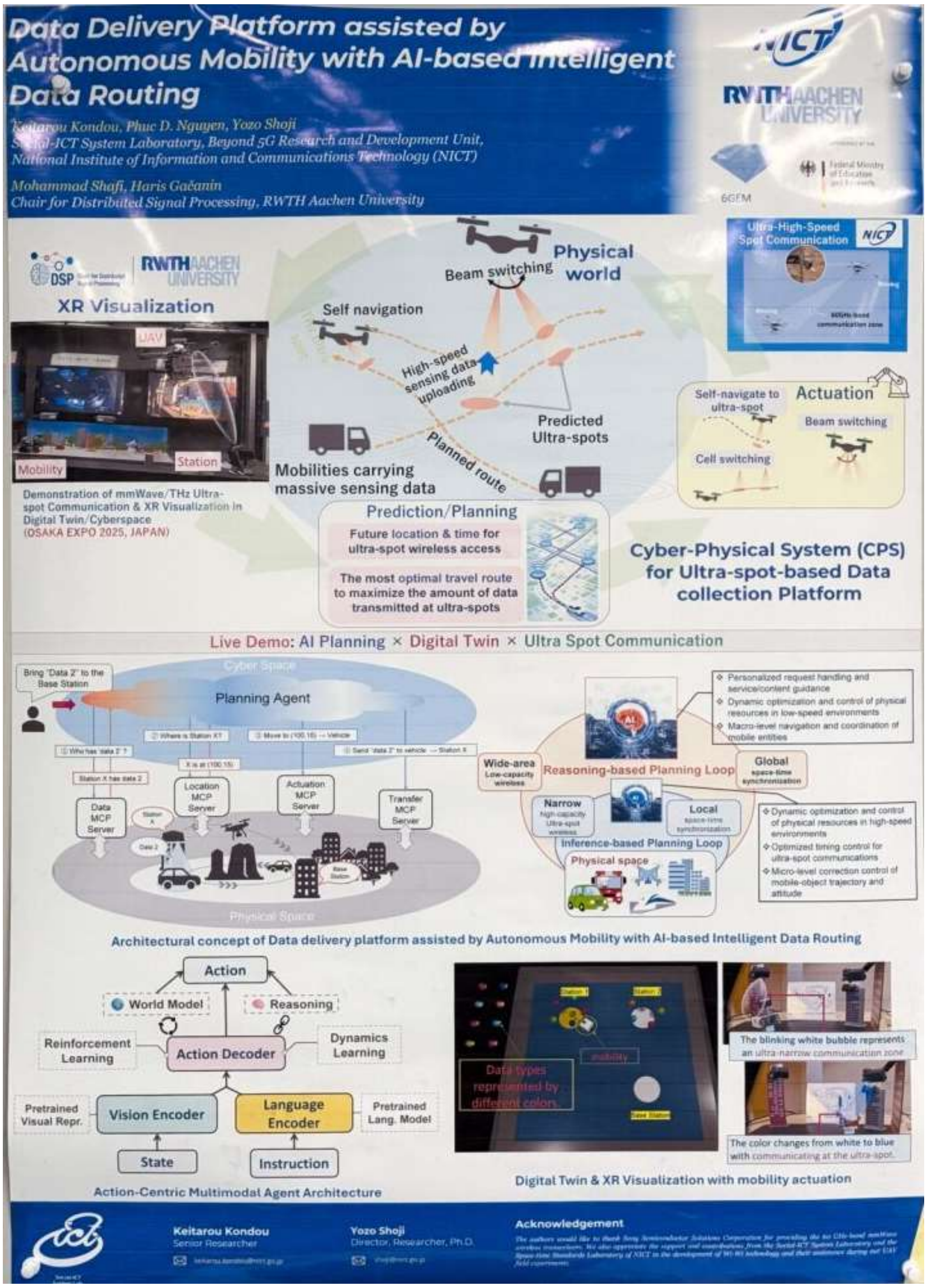


Poster and Demonstration (GJWS7-PD4)

Data Delivery Platform assisted by Autonomous Mobility with AI-based Intelligent Data Routing

Keitarou Kondou (NICT), Phuc D. Nguyen(NICT), Mohammad Shafi, Haris Gačanin (RWTH Aachen University), Yozo Shoji (NICT)

This work explores an architecture for mobility control that optimizes ultra-spot communications using an AI-driven approach. We are studying a concept in which an AI agent performs long-horizon, reasoning-based planning to orchestrate mobility and actions, enabling ultra-spot (localized, high-capacity) communication as a service. XR visualization is employed to present communication status at each ultra-spot. Building on this, we propose a two-layer architecture: (1) a service-level planning loop for global, long-horizon optimization, and (2) an inference-based planning loop for fast, local control using lightweight on-device models (e.g., Vision–Language–Action-style) to achieve real-time alignment and adaptive actuation. This layered approach aims to balance strategic reasoning with responsive control, paving the way for future CPS and digital twin implementations in Beyond 5G/6G environments.

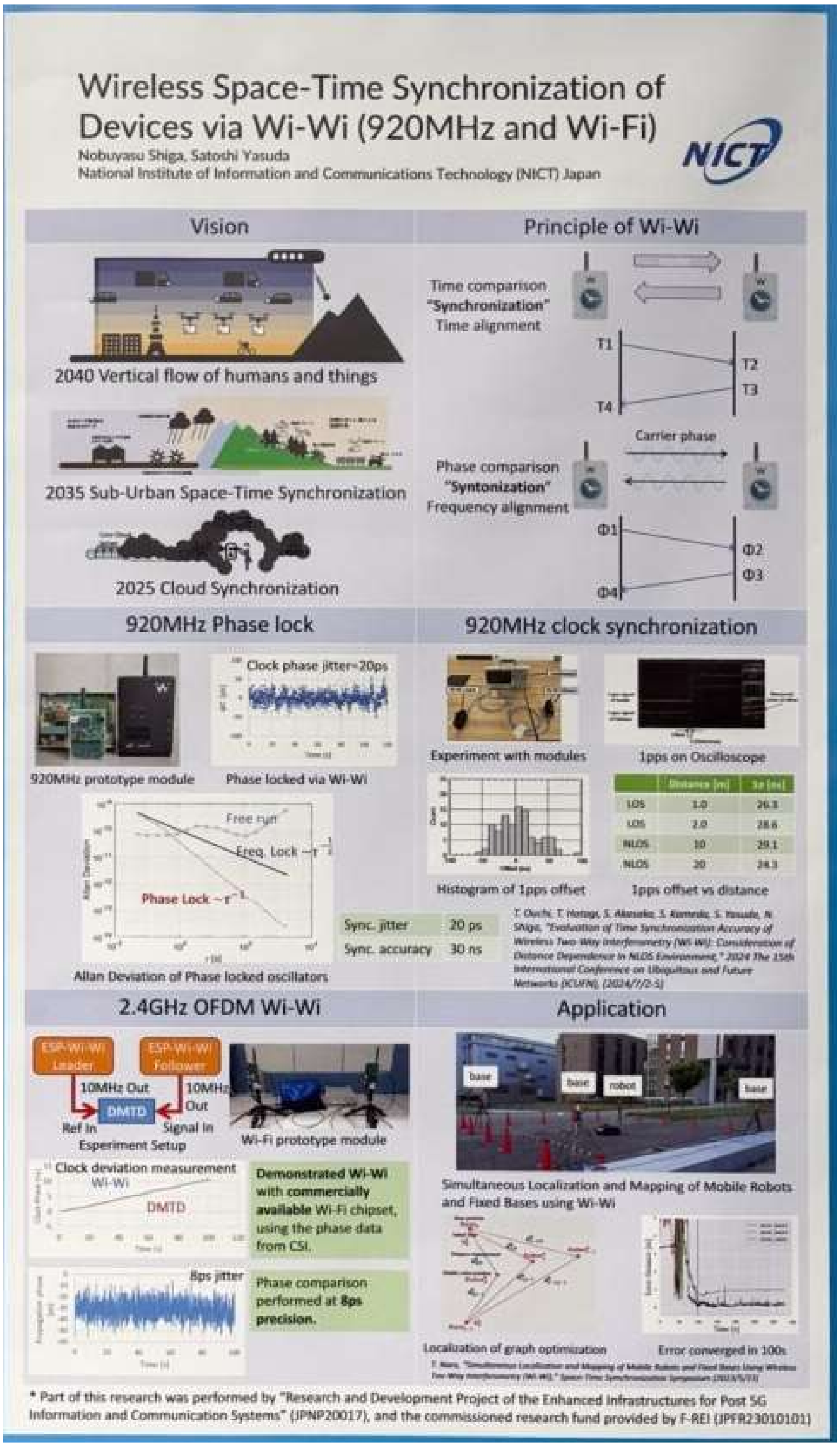


Poster and Demonstration (GJWS7-PD5)

Demonstration of Wi-Wi–Based Position Estimation Using Distributed Wireless Time Synchronization

Nobuyasu Shiga, Satoshi Yasuda

Accurate sensing of position estimation and motion is a fundamental requirement for future Beyond 5G/6G cyber-physical systems, including smart factories, distributed robotics, and resilient positioning infrastructure. In this demonstration, we present a real-time position measurement system based on Wi-Wi (Wireless Two-Way Interferometry), a wireless time-synchronization technology that enables sub-nanosecond relative clock alignment between distributed nodes. By exploiting carrier-phase information synchronized through Wi-Wi, small spatial displacements and dynamic motion can be detected without reliance on GNSS or centralized timing references. The demo showcases experimental results of position variation tracking under controlled motion, highlighting robustness against multipath and clock drift.

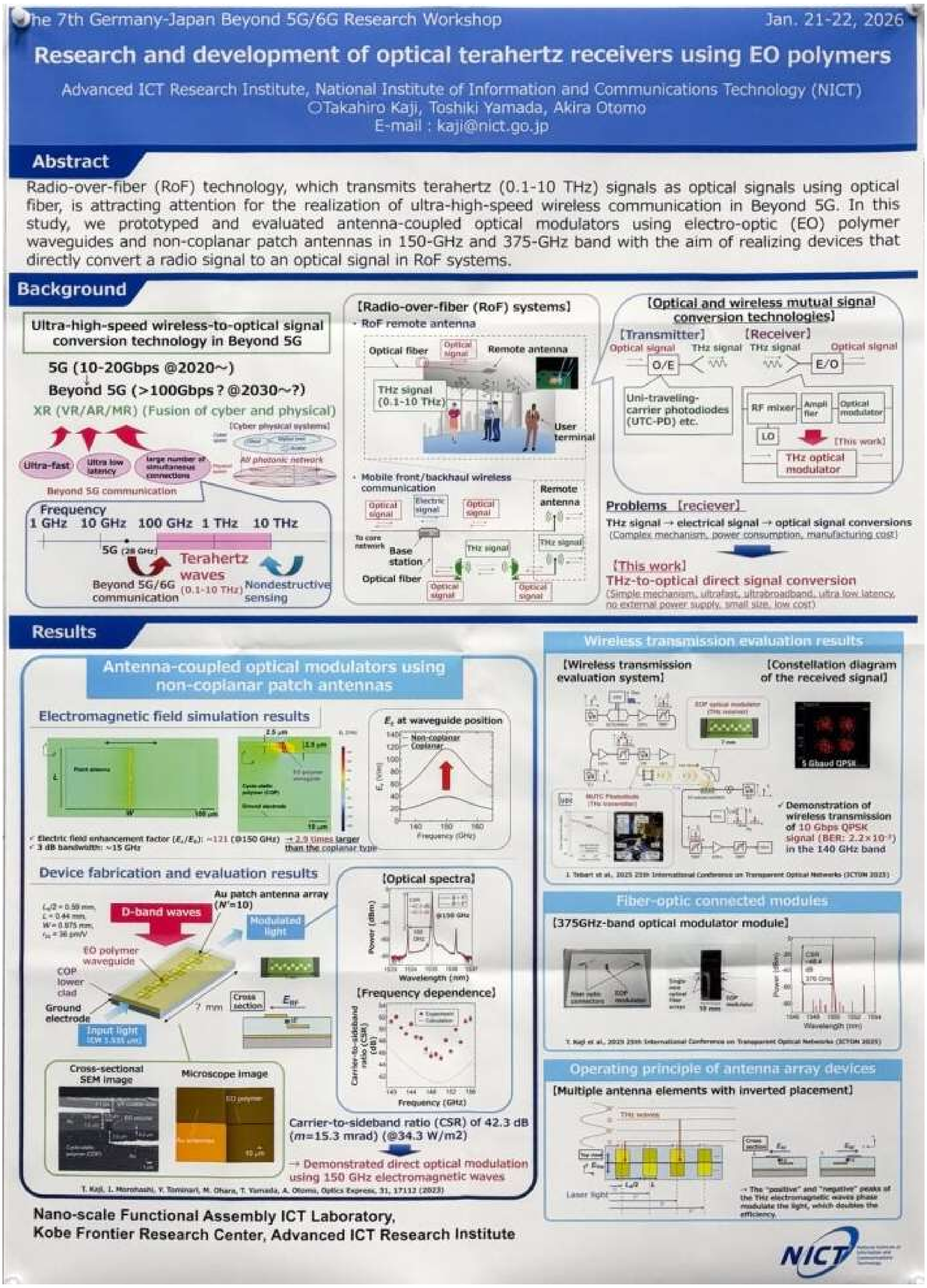


Poster and Demonstration (GJWS7-PD6)

Research and development of optical terahertz receivers using EO polymers

Takahiro Kaji, Toshiki Yamada, Akira Otomo

Radio-over-fiber (RoF) technology, which transmits terahertz (0.1-10 THz) signals as optical signals using optical fiber, is attracting attention for the realization of ultra-high-speed wireless communication in Beyond 5G. In this study, we prototyped and evaluated antenna-coupled optical modulators using electro-optic (EO) polymer waveguides and non-coplanar patch antennas in 150-GHz and 375-GHz band with the aim of realizing devices that directly convert a radio signal to an optical signal in RoF systems.



Poster and Demonstration (GJWS7-PD7) --- The Best Demonstration Award ---

Software-Controlled Analog Beamforming for Network-Controlled Repeater

Jin Nakazato (Tokyo University of Science)

Millimeter-wave (mmWave) communication enables high data rates but suffers from limited coverage and blockage. Network-Controlled Repeaters (NCRs), standardized in 3GPP Release 18, offer a cost-effective solution using analog beamforming. This paper presents a software-controlled beamforming method for NCRs based on Taylor amplitude distribution to obtain extremely low sidelobe level. A 32-element phased array with phase-control ICs was implemented, and the radiation patterns were measured in an anechoic chamber at 28.0 GHz. The results confirm effective beam manipulation and sidelobe reduction, demonstrating the feasibility of software-defined NCR control.