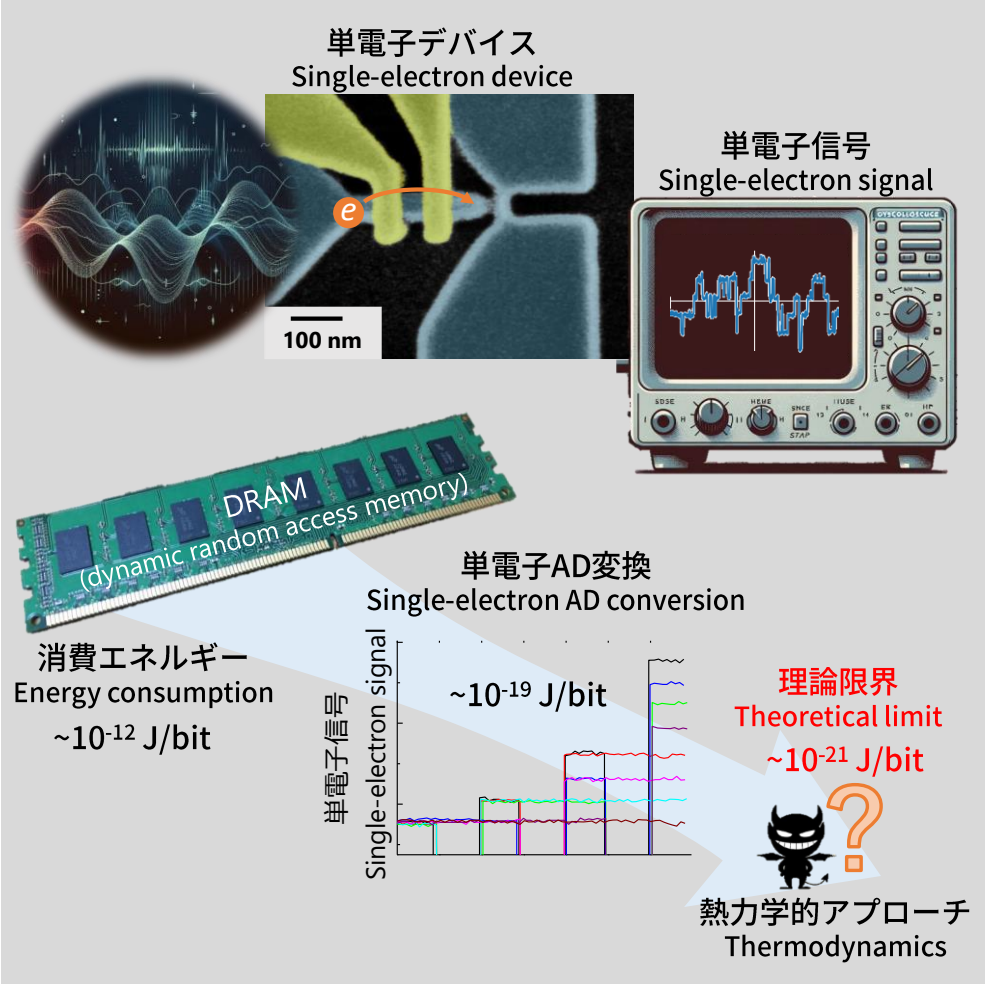
IOWN INTEGRAL
NTT R&D FORUM 2024

RESEARCH
γ07-02

Towards ultimate device performance revolutionized by single-electron technology

Exploring the device-performance limit holds promise for ultra-low energy consumption for data processing

#Green Transformation



///Technical Issue

The key technologies to achieve the performance limits theoretically derived were unexplored.

///Research Goal

We aim to construct the key technologies to the peak performance of electronic devices from the thermodynamics perspectives.

---Technology

- Fabrication of nanometer-scale transistors controlling single-electron motion.
- Technique for deriving pure thermodynamics parameters with statistical analysis on single-electron motion.

---Novelty

- Single-electron control and detection open the new insight to thermodynamics.
- Using non-equilibrium, we demonstrate conversion of noise and high-frequency signals to a single-electron signal.

---Applicable Business

Electronics (~2035)

Exhibitors= NIPPON TELEGRAPH AND TELEPHONE CORPORATION Related URL=News Release／Nanodevices group HP

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