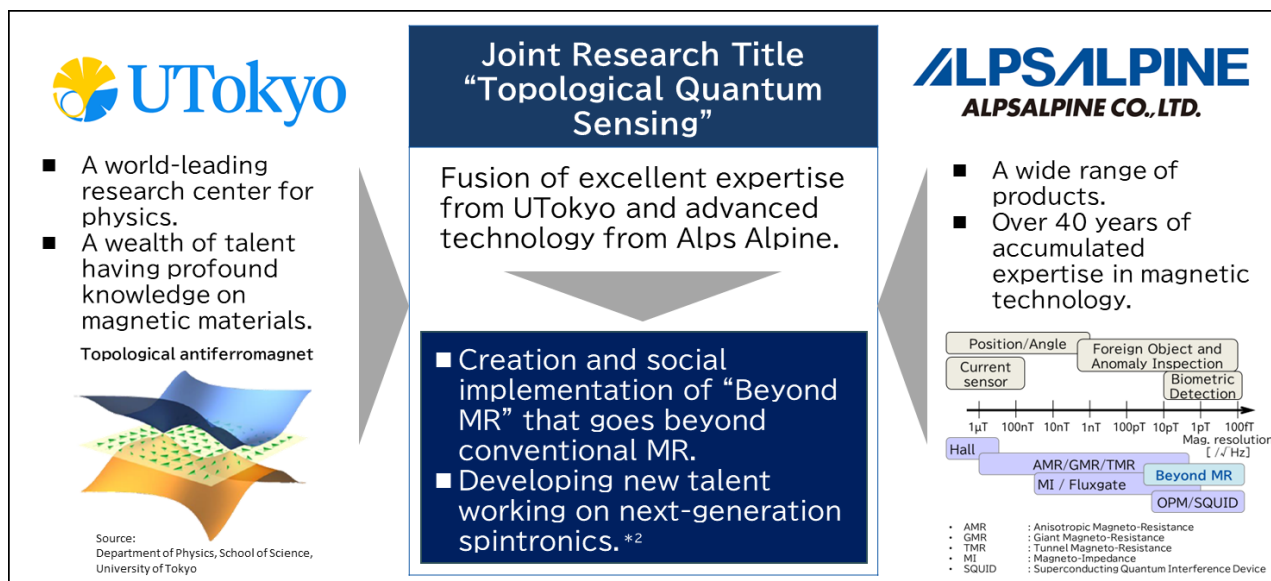


March 17th, 2025
Alps Alpine Co., Ltd.

Started the development of magnetic sensors using topological materials*¹ -Joint Research Launched with The University of Tokyo and Alps Alpine-

Alps Alpine Co., Ltd. (Head Office: Ota-ku, Tokyo; Representative Director, President & CEO: Hideo Izumi; hereinafter “Alps Alpine”) and the research group of Professor Satoru Nakatsuji, Department of Physics, Graduate School of Science, The University of Tokyo (hereinafter “The University of Tokyo”) established a social cooperation program in February 2025 and commenced joint research to develop compact magnetic sensors with world-class magnetic resolution by using macroscopic quantum effects of topological magnetic materials.



Background

Alps Alpine has positioned its sensor and communication business as a growth driver, and plans strategic investment in the sensor field as part of its 3rd Mid-Term Business Plan starting in April 2025. In the sensor field, magnetic sensors are used in a wide variety of applications including automobiles, smartphones, industrial robots, and medical devices. The global market reached a scale of US\$ 4.2 billion in 2023, and is expected to reach US\$ 7.8 billion by 2032.*³

Overview of activity

- Program name: Topological Quantum Sensing
- Research objective: Research compact, room-temperature quantum sensing with world-class resolution
- Nature of research: Research on topological materials and sensing mechanisms applicable to sensors
- Period of activity: Five years, from November 2024 to the end of October 2029

Future outlook

Magnetic sensors enable high-resolution measurement that detects extremely weak changes in magnetic fields. Alps Alpine's current magnetic sensors have a magnetic resolution of about 800 pT, but by using the topological magnetic materials being researched at the University of Tokyo, it is anticipated that resolution can be increased by more than 1000 times (compared to Alps Alpine's current products). This will enable measurement of weak magnetic fields that could not be detected before, and Alps Alpine will strive to create new businesses for industrial machinery and medical markets, such as detecting latent defects and early detection of diseases. Aside from magnetic sensors, applications can also be expected in spintronics devices for the quantum computers that will be needed in the AI field in the future, and Alps Alpine will create new markets.

- *1 Materials that have special quantum properties different from ordinary substances in their interior or on their surface. Macroscopic quantum effects such as the large Hall effect are known to appear in magnetic materials in particular.
- *2 Technology that utilizes and applies both the charge and spin of electrons in solids for engineering purposes.
- *3 Reference: Global Information, Inc., [Magnetic Sensors Market Report by Technology, Application, End Use, and Region 2024-2032](#)

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