

Platform Technologies for AI for Science: Intelligent Imaging Across Biological Scales



Prof. Keisuke Goda
Distinguished Professor in SiRIUS & SRIS

2026.7.6 (Mon) 16:20 – 17:05

Abstract

Artificial intelligence (AI) is transforming science, but its impact depends critically on experimental platforms that generate high-quality, high-dimensional, and actionable data. In this talk, I will present my group's efforts to develop platform technologies for AI for science, focusing on intelligent imaging systems that integrate measurement, computation, and decision-making in real time (Nitta et al, Cell 2018; Nitta et al, Nature 2026; Wang et al, Nature Biomedical Engineering 2026 in press). Together, these technologies show how experimental systems can be engineered not merely to collect data, but to function as discovery engines that allow AI to observe, select, perturb, and learn from biological systems across scales.

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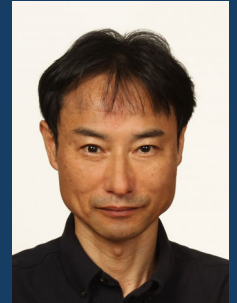


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Superconducting diode effect

Prof. Teruo Ono
Distinguished Professor in SRIS

2026.7.6 (Mon) 17:05 – 17:45



Abstract

We discovered the Superconducting Diode Effect (SDE) in Nb/V/Ta superlattices with a polar structure [1-5]. The SDE is the ultimate diode effect, exhibiting a superconducting state in one direction and a normal state in the other. I will discuss recent developments in SDE research, including zero-field SDE achieved by incorporating ferromagnetic layers into superlattices [6, 7].

- [1] F. Ando et al., *J. Magn. Soc. Japan* 43, 17 (2019).
- [2] F. Ando et al., *Nature* 584, 373 (2020).
- [3] F. Ando et al., *Jpn. J. Appl. Phys.* 60, 060902 (2021).
- [4] Y. Miyasaka et al., *Appl. Phys. Express* 14, 073003 (2021).
- [5] R. Kawarazaki et al., *Appl. Phys. Express* 15, 113001 (2022)
- [6] H. Narita et al., *Nat. Nanotechnol.* 17, 823 (2022).
- [7] H. Narita et al., *Adv. Mater.*, 10.1002/adma.202304083.

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