

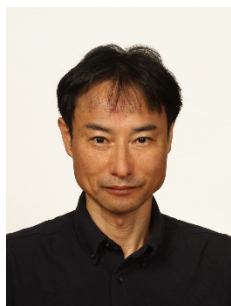
# Seminar: Teruo Ono

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## Superconducting diode effect

### Biography



Teruo Ono received the B.S., M.S., and D.Sc. degrees from Kyoto University in 1991, 1993, and 1996, respectively. After a one year stay as a postdoctoral associate at Kyoto University, he moved to Keio University where he became an assistant professor. In 2000, he moved to Osaka University where he became a lecturer and an associate professor. Since 2004, he has been working at Kyoto University, where he is now a professor. He has published over 280 technical articles in peer-reviewed journals, including book chapters and review articles, and has given more than 90 invited presentations at international conferences. He served as conference co-chair of the 8th International Symposium on Metallic Multilayers (MML) in 2013, and on the program committees of various international conferences on magnetism and spintronics.

### Abstract

We found the superconducting diode effect (SDE) in Nb/V/Ta superlattices with a polar structure, which is the ultimate diode effect exhibiting a superconducting state in one direction and a normal state in the other [1-3]. The SDE can be considered as the nonreciprocity of the critical current for the metal-superconductor transition. We have also found the reverse effect, i.e., the nonreciprocal critical magnetic field under the application of supercurrent [4]. We also found that the polarity of the superconducting diode shows a sign reversal when the magnetic field is increased [5]. Recently, we have succeeded in demonstrating zero-field SDE by introducing ferromagnetic layers into superlattices [8, 9]. The polarity of the SDE is controlled by the magnetization direction of the ferromagnetic layer, leading to the development of novel non-volatile memories and logic circuits with ultra-low power consumption.

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### References

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