

Spontaneous Magnetization in a Superconducting State

W. Higemoto

Advanced Science Research Center, Japan Atomic Energy Agency, Tokai, Ibaraki 319-1195, Japan.

In a few compounds, a spontaneous magnetization in a superconducting state have been understood in a framework of a time reversal symmetry breaking (TRSB) superconductivity. In a TRSB superconducting state, spins and/or orbitals of Cooper pairs make quite small magnetic fields. Since directions of such the magnetic fields are different in each small domains of sample, TRSB superconductivity can not be detected by using bulk measurements. Muon spin relaxation (μ SR) method under zero magnetic field is most powerful technique to detect a TRSB superconductivity. Up to now, only two superconductors, Sr_2RuO_4 and $\text{PrOs}_4\text{Sb}_{12}$, were found as TRSB superconductors by using μ SR. A detail of spontaneous magnetization in superconductors, which were probed by ZF- μ SR, will be presented.