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ECR Ion Source with High Temperature Superconducting REBCO Coils

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High temperature superconductor REBCO has the property of maintain a high critical current density under strong external magnetic field, which makes a promising material for electromagnets in cyclotron and ECR ion source. Therefore, an ECR ion source using iron-less REBCO coils as electromagnet is under development in Research Center for Nuclear Physics (RCNP), Osaka University. A coil system with 3 circular solenoid coils and 6 racetrack sextupole coils was fabricated, and low-temperature performance tests in 77 K were carried out. The test results upon the stability and capability of magnet field inducing will be presented in this work. The design of the ion source will also be discussed. Results yielded in this research will also be made the best use of the development of a skeleton cyclotron, a compact air-core cyclotron being developed in RCNP, which is also planned to use REBCO coils as electromagnets.

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Footnotes

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Yes

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