国立研究開発法人理化学研究所　仁科加速器科学研究センター
第273回 RIBF核物理セミナー
RIKEN Nishina Center for Accelerator Based Science
The 273rd RIBF Nuclear Physics Seminar

Nature of Coronae around Supermassive Black Holes

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Central supermassive black holes of active galactic nuclei host hot plasma with a temperature of 10^9 K, namely coronae. Like the Sun, black hole coronae are theoretically believed to be heated by their magnetic activity, which have not been observed yet. In this talk, we report the detection of coronal radio synchrotron emission from two nearby Seyfert galaxies using the Atacama Large Millimeter/submillimeter Array (ALMA). The coronal magnetic field of both systems is estimated to be ~10 G on scales of ~40 Schwarzschild radii from the central black holes. This magnetic field strength is weaker than the prediction from the magnetically heated corona scenario. We also find that coronae of Seyferts are composed of both thermal and nonthermal electrons. These non-thermal electrons can generate gamma-rays via inverse Compton scattering of disk photons, which can appear with power-law spectra in the MeV band. Future MeV gamma-ray observations together with ALMA (millimeter-band) will be a key for understanding the nature of coronae around supermassive black holes.

May 14th(Tue.)2019　13:30～
RIBF Hall, RIBF bldg., RIKEN

＊ The talk will be given in English language.

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