GroundBIRD - An experiment for CMB polarization measurements at a large angular scale from the ground

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***Abstract*—The B-mode polarization of the cosmic microwave background (CMB) at large angular scales is a smoking-gun signature of the inflationary universe. Especially, detecting an ionization bump at l<=10, where l is the multipole of the B-mode power spectrum, should be a clear evidence for the primordial gravitational wave induced by inflation. GroundBIRD is designed to detect such a large angular-scale B-mode power from the ground.**

We are going to use a superconducting detector array with a small telescope which is also in the cryogenic system. The basic design can be applied to a future satellite experiment. GroundBIRD employs a special turn table for continuously rotating the telescope instead of the system for the ordinary azimuth scan. This allows us to perform high-speed scans (20 rpm) without any deceleration. As a result, the sky coverage is extended without suffering from the detector 1/f noise. Our target l range is 6 <= l <= 300.

We plan to start commissioning the system in Japan in early 2014. The instruments will then by moved to the Atacama desert in Chile for science observations. We will present the status of the system development.