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## Telescope Tilt System for the POEMMA Balloon Radio Mission

The Probe of Extreme Multi-Messenger Astrophysics Balloon with Radio mission (PBR) will point above Earth's limb to measure PeV energy cosmic rays, and record star images to monitor optical focusing in situ. PBR will point below Earth's limb to search for earth-skimming neutrinos. PBR will also measure EeV energy cosmic rays by tilting as far down as the nadir direction. All of these searches will require changing and measuring the tilt angle of a single large integrated telescope + radio antenna assembly in the near space environment at 33 km above sea level over a mission duration as long as 50 days. In addition, the 1.1 m diameter entrance pupil of the telescope will be covered during the day by a shutter system to prevent sunlight from melting the camera systems and will be opened at night to collect data. Here we present the design and status of the tilting system, the tilting monitors, the shutter system, the controller, and the pre-flight thermal vacuum testing process. The work draws on the experience of 2023 Extreme Universe Space Observatory on a Super Pressure Balloon 2 mission.

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