Based on the theory that the earth rotation parameters can be derived from analyzing the progressive moment of the gyro, we try to find a method of using gyroscopes to measure the earth's rotation parameters. GAT high-precision magnetic levitation Gyro Station is our self-developed instrument. We use this new instrument to verify the idea mentioned above. National Geodetic Origin Point in Shaanxi Province Jingyang Yongle Town is selected as the experimental site. During this test, we focus on the measurement of the earth's rotation rate and latitude. After analyzing the data, we get the value of the length of day (LOD) and latitude. The results are influenced by the environment around the test field and the instrument constant measurement error and RDC error within the gyro also affect the systematic errors. The error of the LOD is about 5 min which is difficult to measure changes in day length and for the latitude measurements, although current gyro results can not meet the needs of the polar motion measurements, it can determine the approximate latitude of a region. For the further work, it is possible to improve from gyro structure design, measurement method and data algorithm to get better result.