The longitudinal Oscillation of Great Red Spot and SSTB-Ovals of Jupiter

Tadashi Asada[1]

[1] Economics, KIU

Jupiter images of 2003-04 apparition were measured to confirm the oscillation of Great Red Spot (GRS) in longitudinal direction. In order to increase the measurement accuracy, time of imaging was recorded in second, correction of north-south direction of each image and of phase angle was carried out if necessary, and limb/terminator of each image was determined by extrapolation.

After removing the constant speed component from the motion of GRS, we confirmed the longitudinal oscillation, whose period is about 90 days and whose amplitude is about 1 degree. The same measurements were carried out for the white ovals of 40 degree south (SSTB-Ovals). We find the oscillations of SSTB-Ovals. Its perioda are from 120 to 150 days, and its amplitudes are from 2 to 3 degree. These oscillations have different phase each other.

As the mechanism for these oscillation, we think oscillation in latitudinal direction, which is observed in longitudinal direction due to latitudinal shear of zonal wind, or interaction by other vortices. These two mechanism may be coupled.