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Investigating Magnetic Precession in the Magnetized Kerr Spacetime

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Abstract

When any compact object such as black hole rotates, the nearby spacetime gets twisted and the orbital plane of test particles undergoes precession. This is called the Lense-Thirring precession which arises solely due to the rotation. Recently, it was predicted that similar precession arises for non-rotating black hole spacetime in the presence of magnetic field. It is timely because of the recent observation of magnetic field around M87* black hole by the Event Horizon Telescope(EHT). Thus, we find the orbital plane precession in the rotating black hole spacetime immersed in magnetic field which gives further insight into the magnetic field generated phenomenon.

Keywords: spacetime, orbital plane precession, magnetic field.