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Space debris in LEO Region: Orbital Dynamics described by Resonant Angles

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The Low Earth Orbits (LEO) has an increasing number of space debris justifying the interest in the observation and collision avoidance. The orbital dynamics of several of these objects involve different resonances distributed by the distinct altitudes. In this work, objects in resonant orbital motions in the regions of 14:1 and 15:1 resonances are studied. Using the two-line elements (TLE) of the NORAD, resonant angles are described to develop an analytical model and the time behaviors of the orbital elements. Frequency analysis shows possible irregular motions describing the orbital motions of these objects.

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