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| Name-Surname | Giannoula Grammenou |
| Thesis Title | <i>Approximate conservation of angular momentum of a test mass in the gravitational potential of N masses forming a canonical polygonal</i> |
| Supervisor | Th. Apostolatos, Associate Professor |
| Summary | <p>According to Noether's theorem, if the Lagrangian of a physical system is symmetrical with respect to continuous transformations of the coordinates then there are specific physical quantities that are conserved.</p> <p>In the case of a test particle moving in the gravitational field of N identical masses forming a canonical N-polygon, the Lagrangian is symmetric to a discrete transformation of the polar angle θ, which is not continuous. Therefore Noether's theorem does not hold in this particular physical system. However, one expects that in the limit $N \rightarrow \infty$ the angular momentum to be conserved since then the discrete symmetry becomes continuous. We explore this approximate conservation and present analytical expressions that give us an order of magnitude of the range of non-conservation of angular momentum in this case.</p> |
| Key words | conservation of angular momentum, discrete transformations |
| Evaluation committee | Th. Apostolatos, Associate Professor P. Ioannou, Professor N. Vlahakis, Associate Professor |