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Author: Mr. Abhay Kaushik Nudurupati
University of Petroleum and Energy Studies, India, nabhaykaushik@gmail.com

Ms. Kanupriya Shrivastava
University of Petroleum and Energy Studies, India, kanupriyashrivastava20@gmail.com

NUMERICAL STUDY OF GRAVITATIONAL WAVE BEHAVIOR AMONG A SYSTEM OF MASSES

Abstract

"Gravity is the curvature of space-time caused by mass and energy" as stated by Albert Einstein, the space time behavior dominated as a response to gravitational wave patterns caused by mass and energy in the space-time portrays a primary entity along the retaliation of universe. With multiple masses and enormous energies held all over, the behavior of gravitational waves and the study plants a simpler yet effective model to understand the resulting phenomenon and events of near future. In view, the study presents a computational model to study the relative behavior of gravitational waves across a two body and a three body system effective among mutual masses. Performed validation of the work is supported by existing observable phenomenon and available literatures through similar studies. A computational model of the same is designed using Autodesk Fusion 360 along with MATLAB, for numerical analysis and validation on software's COMSOL Multiphysics and Simulink in respect to resulting instances. Iterative result validations are performed to incorporate mass carrying bodies along their orbital parameters as a cause of natural formation. The work stands a baseline for advanced study of gravitational wave behavior, opening new frontiers for effective and vast exploration of universe with ease.