A NEW CONCEPT OF GRAVITY : KEPLER'S LAWS REDERIVED

A.MEERADEVI, UMA AND ALAGAR RAMANUJAM
P.G.DEPARTMENT OF MATHEMATICS
SRI.G.V.G.VISALAKSHI COLLEGE FOR WOMEN****
(AUTONOMOUS)
UDUMALPET, TAMILNADU (India)
Email : aliyarbraintrust@yahoo.com

The nature of the gravitational force and its role in the structural formation of the physical universe have been extensively studied by Newton and Einstein. Newton defined gravity as an interaction between two masses and declared his famous gravitational law; "Every particle attracts every other particle with a force directly proportional to the product of their masses and inversely proportional to the square of the distance between them". According to him, $F= (Gm_1m_2)/r^2$ where G is the proportionality constant which turns out to be an universal constant. When the nature of orbit of a particle around the sun is studied with the help of the above formula, one obtains the following linear differential equation

$$d^2/ d¢^2 + u = mk/l^2$$

linking the variables r and ¢ associated with the orbiting particle (m, mass of the sun ; I , angular momentum of the orbiting particle ; k is a constant). As is well known, this differential equation leads to the result that the path of the orbiting particle is a closed ellipse.

In recent years, Alagar Ramanujam and Uma have been working on a new model, namely Vethathiri Model of the Universe wherein interaction between the sun and an orbiting particle is given by the formula,

$$F= C – (R_s/r^2) - Kr$$

Here gravity is attributed to the self-compressive force of the space on the masses rather than to an attractive force between them due to their masses, as assumed by Newton. In this paper the mathematical consequences of the above expression for the

force are studied. We discuss here in particular the nature of the planetary orbits and derive the conditions under which the above formula leads to Kepler's laws for planetary motions.

REFERENCES :

1. Alagar Ramanujam and Uma : International conference " Physical Interpretations of Relativity Theory" London (September, 2000)

2. Alagar Ramanujam and Uma : Proc. Of the Brain Trust (World Community Service Centre, Chennai May 2001)

3. Meera, Uma and Alagar Ramanujam : National Symposium on Mathematical methods and its Applications (Indian Institute of Technology, Chennai, 2001).

****