

**Overview: Relativity, Gravitation, Relativistic Rotation: Clarifying Some Paradoxes at the Extreme**, by Netsivi Ben-Amots. Technology Dynamics Inc., New Jersey, U.S.A., 474 pp. (2017).

According to Einstein's Special Relativity theory  $E = mc^2$ , meaning that  $m = E/c^2$ . Before deriving General Relativity theory, Einstein (1912) considered the rest mass to be constant, i.e., not dependent on the distance to another mass. Einstein's limitation means that the rest mass includes many types of energy, but does not include gravitational energy. However when this constraint is removed, the rest mass will also include the gravitational energy, and is dependent on the distance to another mass.

The second famous equation of Special Relativity is the relativistic addition of velocities  $\mathbf{v} = \frac{\mathbf{v}_1 + \mathbf{v}_2}{1 + \mathbf{v}_1 \mathbf{v}_2 / c^2}$ . When applying this formula to rotation, the obtained formula is not the classical one  $\mathbf{v} = \boldsymbol{\omega} r$ . P. Franklin (1922) derived a more precise approximate relativistic formula. When applying Franklin's formula of relativistic rotation new implications arise.

Independently, when applying  $\mathbf{v} = \frac{\mathbf{v}_1 + \mathbf{v}_2}{1 + \mathbf{v}_1 \mathbf{v}_2 / c^2}$  on Hubble's Law of the expansion of the universe other new implications arise.

In this book the author, Dr. Netsivi Ben-Amots deals with these questions and others by use of clear and simple mathematical terms. The author leads the reader through his step by step derivations, with applications mainly in astrophysics.

From Dr. Ben-Amots's theories a new and surprising body of knowledge emerges, one that fits all the present observations and measurements as well as most of the predictions of the theory of General Relativity. Moreover, in extreme cases it presents new predictions, including one surprising prediction of a new set of electron orbitals around a proton. This prediction needs verification by observation.

In this new and fresh formulations of Dr. Ben-Amots, the known paradoxes of astrophysics such as black holes, big bang, singularities, dark matter and dark energy do not exist because they are solved without needing any exotic concepts.

In addition, Ben-Amotss concepts and mathematical formulations provide explanations to unsolved problems in physics. These include but are not limited to:

- a) How imploding supernovae bounce back outward to enormous explosions,
- b) How thick accretion disks accelerate relativistic jets,
- c) The structure and stability of quasars and active galactic nuclei and how they produce jets,
- d) The sources of energy to these phenomena.

In a famous expression Einstein said that nature did not think it was her business to make the discovery of her laws easy for us.

The author further adds that nature neither has any obligation to conform to existing paradigms. The new theories presented by the author in this book replace a few paradigms. As such Dr. Ben-Amots embarked on an ambitious endeavor.

It is expected that some of those holding to the theories challenged by him will dismiss his works offhand, but doing so will be dismissal of fundamental well accepted and proven components of Einstein Special Relativity and Franklin's relativistic rotation. Dr. Ben-Amots modifies these concepts to derive new theories to explain phenomena of the universe at extreme conditions. He does this by using the same measurements prevailing in the field, but from them he derives new conclusions which are simpler and devoid of interpretations which are not necessary for science to be complete.