

Unification of Theories Requires a Postulate Basis in Common

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A primary challenge of natural sciences in the new millennium is to cure the gap between metaphysics and empiricism – and puzzle out the obstacles to a unified theory and an understandable picture of reality. Antique science flourished via its strong philosophical impact but faded away due to the lack of supporting empirical science. The fast development of mathematical physics has led to the other opposite; theories are diversified, they are more like mathematical descriptions of observations; they provide precise predictions but lack a solid metaphysical basis and an understandable picture of reality.

Anyway, modern science has increased our understanding of physics from elementary particles to cosmological structures and produced information that allows reevaluation of the basis. In the presentation, we show that by switching from an observer-oriented perspective to a system perspective, any local energy object is related to the rest of space and relativity appears as a direct consequence of the conservation of total energy in the system – without scarifying the absolute time and distance essential for human comprehension. Such a holistic approach has led to the Dynamic Universe (DU) theory. After maturing for the last twenty years, DU produces precise, well-tested predictions for local and cosmological observables and an uncontradictory linkage to quantum mechanics.



The big puzzle



Observer oriented reality or system oriented reality

Local approach: observer oriented reality



From observer-oriented to system-oriented reality

By setting Earth at the center, Ptolemaic astronomers lost the structure of the planetary system and the observer's motion in the system. Copernicus introduced a system-oriented perspective of the Sun and the planets which uncovered the effect of observer's location and motion in the system.





Newton's laws of motionStart of mathematical physics...

We are now looking for a system-oriented perspective **for whole space** in order to reorient ourselves in the system and uncover a possible hidden motion we are subject to in the system.

We need a metric 4th dimension for closing space as the 3D surface of a 4D sphere!



- Þ Dynamic Universe
- **A** major step towards unification

Dynamics of spherically closed space



In spherically closed space gravitation tends to pull the structure towards the center ...

Standard cosmology





- The energy of matter in space was created in a quantum jump (against release of quantum potential?).
- Space is expanding local systems (galaxies, planetary systems) conserve their dimensions.
- The velocity of light and the rest mass of matter are conserved and considered as natural constants.
- The reduced frequency of atomic clocks by motion and gravitation is explained with dilated flow of time.

Dynamic Universe





- The rest energy of matter is the energy of motion obtained against release of gravitational energy in the contraction phase.
- Local, gravitationally bound systems expand in direct proportion to the expansion of space.
- The velocity of light is linked to the 4D velocity of space and the rest mass to motion in space.
- The reduced frequency of atomic clocks by motion and gravitation is explained by the quantum mechanical solution of characteristic frequencies.

Motion of space and motion in space

$$E_{next} = c |\mathbf{i}mc| = c |\mathbf{p}^{\circ}|$$

$$E_{nud} = c |\mathbf{p}^{\circ}|$$

$$E_{nu$$

The effect of local gravitation and motion on the rest energy



The effect of motion and gravitation on the rest energy

$$E_{rest(\delta,\beta)} = E_{rest(0)} (1 - \delta) \sqrt{1 - \beta^2}$$

The system of nested energy frames



The system of nested energy frames



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Back to the puzzle

The big puzzle



The big puzzle



Atomic clocks

Unified expression of energy

The characteristic frequency of atomic oscillators



Satellite in Earth gravitational frame (ECI frame)



$$f_{(DU)} = f_{0,0} \left(1 - \delta \right) \sqrt{1 - \beta^2} \approx f_{0,0} \left(1 - \delta - \frac{1}{2} \beta^2 - \frac{1}{8} \beta^4 + \frac{1}{2} \delta \beta^2 \right)$$

$$f_{(GR)} = f_{0,0}\sqrt{1 - 2\delta - \beta^2} \approx f_{0,0}\left(1 - \delta - \frac{1}{2}\beta^2 - \frac{1}{8}\beta^4 - \frac{1}{2}\delta\beta^2\right)$$

DU-kirjat 🕑 🔰 A C M S R Q C A L



Force and acceleration, F=ma?

Newton's second law of motion is not a general law of nature but an approximation omitting the effect of the rest of space!



Unified expression of energy

Coulomb energy
$$E_{c} = \frac{q_{1}q_{2}\mu_{0}}{4\pi r} c_{0}c = N_{1}N_{2}\alpha \frac{h_{0}}{2\pi r} c_{0}c = c_{0}m_{c}c$$



$$E_{\lambda} = c_0 \left| \mathbf{p} \right| = \frac{h_0}{\lambda} c_0 c = c_0 m_{\lambda} c$$





The rest energy of mass

$$E_{rest} = c_0 \left| \mathbf{p}_4 \right| = c_0 mc = c_0 \frac{h_0}{\lambda_m} c$$



Kinetic energy

$$E_{kin} = c_0 \left| \Delta \mathbf{p}_{tot} \right| = c_0 \left(m \Delta c + c \Delta m \right)$$



Cosmological consequences

Development of elliptic orbit in GR and DU



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Orbital periods near Sgr A* black hole



Sagittarius A*:

M ? 4 million solar masses $r_{c(DU)}$? 5.7 million kilometers



Expanding and non-expanding objects in DU-space.







Gravitational systems expand with the expansion of space

Electromagnetic objects, like atoms, conserve their dimensions



The wavelength of electromagnetic radiation propagating in space increases in direct proportion to the expansion of space

Day / year according to coral fossil data



Angular size of galaxies and quasars, observations / predictions

Collection of data: K. Nilsson et al., Astrophys. J., 413, 453 (1993)



Magnitude versus redshift: K-corrected Supernova observations



SUMMARY:

- Dynamic Universe allows an understandable picture of reality with absolute time and distance
- Gives at least as precise predictions to cosmological observations as the standard cosmology model with essentially simpler mathematics
- Opens a new perspective to understanding of quantum phenomena



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Its an exceedingly ungrateful task to propose a paradigm change,

anyway,

somebody has to do it ...

Thank you for your attention!