

## GR 7: Foundations and Alternatives II

Time: Tuesday 15:45–17:05

Location: HBR 14: HS 3

GR 7.1 Tue 15:45 HBR 14: HS 3

**Der Ursprung der dunklen Materie** — ●ALBRECHT GIESE — Tausweg 15, 22605 Hamburg

Die dunkle Materie gilt derzeit als das am wenigsten verstandene Phänomen der Physik. Zwei Theorien werden diskutiert als mögliche Lösung: (1) Die Annahme von neuen Teilchen, welche nur über Gravitation wechselwirken und (2) eine Änderung des Gravitationsgesetzes in der Weise, dass sich bei schwachen Feldern die Entfernungsfunktion ändert (MOND).

Beide Ansätze gelten als widerlegt durch Beobachtungen, und das mit jeweils hoher Signifikanz. Die Teilchenhypothese durch Galaxien, die umeinander kreisen. Der Ansatz MOND durch die Vermessung von Doppelsternen mit großem Abstand.

Ein bisher nicht beachtetes Phänomen ist nun die Gleichheit der Verteilungen des DM-Effekts mit der Verteilung der Photonen um Galaxien herum. Hier bietet sich der revolutionäre Ansatz an, dass Photonen selbst diese Teilchen sind - bei einer 'kopernikanischen' Änderung des Gravitationsgesetzes; nämlich der Unabhängigkeit der Gravitation von Masse.

Dieser Ansatz erklärt alle bekannten Beobachtungen des Phänomens dunkle Materie. Und er liefert im Falle der Gravitationskurven sogar quantitativ korrekte Ergebnisse - mittels Rohdaten, ohne jegliche Anpassung von Parametern. Und das als einziger heute existierender Ansatz.

Weitere Info: [ag-physics.org/gravity](http://ag-physics.org/gravity)

GR 7.2 Tue 16:05 HBR 14: HS 3

**GR-Time dilation from (EP) why not from energy conservation.** — ●MANFRED GEILHAUPT — 41844 Wegberg

In physics, gravity is a fundamental interaction which causes mutual attraction between all things that have mass (energy). 1. Mass (energy) bends light (energy)! So light also can bend mass. 2. Clocks run faster on a mountain and slower at earth level! Conclusion: GR-time dilation explained with Einsteins equivalence principle (EP) must be basically a fact of matter due to energy conservation. (Conclusions from thermodynamic principles, see research gate pre-print)

GR 7.3 Tue 16:25 HBR 14: HS 3

**The infalling observer's twofold perception** — ●RENÉ FRIEDRICH — Strasbourg

Black holes, and in particular the underlying Schwarzschild metric, are associating finite and infinite time structures. In particular, the infalling observer is reaching the event horizon within finite time while according to external observers, she will never reach the event horizon. In this talk, it will be shown that up to now, the point of view of the infalling observer has been fundamentally misunderstood, because there is not taken into account the fact that every infalling observer approaching the event horizon is also an external observer, such that she disposes of two competing ways of perception.

The topic was subject of an essay that received a "honorable mention" in the essay contest 2023 of the Gravitational Research Foundation. Further information: R. Friedrich: [Quantengravitation ohne Mühe](https://www.quantengravitation.de)

GR 7.4 Tue 16:45 HBR 14: HS 3

**Only Euclidean Relativity Provides a Holistic View of Nature** — ●MARKOLF NIEMZ — Heidelberg University, Germany

Special and general relativity (SR/GR) describe nature "subjectively", that is, from the perspective of just *one observer at a time* (one group of observers, to be exact). Mathematically, SR/GR are correct. I show: (1) Physically, SR/GR have an issue. Despite the covariance of SR/GR, there is always just one active perspective. Because of this constraint, there is no holistic view of nature. The issue shows itself in unsolved mysteries. Still, the Lorentz factor and gravitational time dilation are correct. This is why the concepts of spacetime in SR/GR work well except for cosmology and quantum mechanics. (2) Euclidean relativity (ER) describes nature "objectively", that is, from the perspectives of *all objects at once*. Any (!) object's proper space  $d_1, d_2, d_3$  and proper time  $\tau$  span natural spacetime, which is 4D Euclidean space (ES) if we interpret  $c\tau$  as  $d_4$ . All energy moves through ES at the speed  $c$ . An observer's reality is created by projecting ES orthogonally to his proper space and to his proper time. In SR, these concepts are considered coordinate space and coordinate time. Neither their reassembly to a non-Euclidean spacetime nor the parameterization in SR/GR provides a holistic view. The scalar  $\tau$ , in particular, cannot factor in an object's 4D vector "flow of proper time"  $\tau$ . The SO(4) symmetry of ES is incompatible with waves. This is fine because waves and particles are subjective concepts. We must distinguish between an observer's reality (described by SR/GR) and the master reality ES (described by ER). ER solves 15 mysteries ([preprints.org/manuscript/202207.0399](https://preprints.org/manuscript/202207.0399)).