

EN_3: 3S+T Geometry and Determinism in Einstein-VED

Résumé

Il développe la géométrie de l'espace-temps 3S+T à partir de la métrique de Minkowski ($ds^2 = -dt^2 + dx^2 + dy^2 + dz^2$) avec $c = 1$.

La vitesse $v = ds/dt$ mesure la dépendance entre l'espace et le temps. Il en déduit que l'espace émerge de la différence quadratique des temps relatifs ($ds^2 = dt^2 - (dt')^2$). Pour les particules à $v = c$, le temps propre se fige ($dt' \rightarrow 0, ds' \rightarrow 0$), ce qui explique l'intrication quantique comme une géométrie partagée : des particules antipodales sur un front d'onde partagent la même origine spatio-temporelle (t_0, s_0). Il n'y a pas d'action à distance ni d'effondrement ; la fonction f garantit le déterminisme causal.

10.5281/zenodo.17172925

1. Axiomatic critique of uncertainty

- Quantum mechanics (QM) is based on uncertainty as a fundamental property.
- It is argued that this uncertainty only reflects **observer ignorance**, not an intrinsic property of reality.
- Postulate: **velocity expresses the dependence between space and time**:
- $v = 0$: space and time independent.

- $v \neq 0$: space and time dependent.
 - $v = c$: total dependence ($ds = dt$ in natural units).
 - Consequence: the **structural non-separability of variables** (position and momentum) invalidates Heisenberg's basis.
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2. Determinism vs indeterminism

- Indeterminacy arises within space-time, because the function f of each point is defined by its past.
 - f is completely determined by the past light cone and cannot alter the past.
 - For $t \geq t_0$ (future), f is not defined: the future does not condition the past.
 - Freedom: ignorance of the future allows choosing actions without the past being altered.
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3. Geometry of 3S+T space-time

- It arises from the Minkowski metric $(- + + +)$:

$$ds^2 = -dt^2 + dx^2 + dy^2 + dz^2$$

- Natural units: $c = 1$, making space and time compatible.
- Differential Lorentz transformations:

$$dx' = \gamma(dx - vdt), \quad dt' = \gamma(dt - vdx)$$

- Velocity as a measure of dependence:

$$v = ds/dt$$

3.1 Emergence of space

- Space arises from the **quadratic difference of relative times**:

$$ds^2 = dt^2 - (dt')^2$$

- Each point of space-time has a function f that depends on its causal past, determining present and future.
 - Independence of variables (position and momentum) **does not exist structurally**.
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3.2 Proper time and space at $v \rightarrow c$

- For particles at limiting speed:

$$dt' \rightarrow 0, \quad ds' \rightarrow 0$$

- Proper time and space cease to flow from the external perspective, reinforcing total dependence.
 - The light cone continues to delimit causality and the function f remains coherent.
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3.3 Antipodal particles and entanglement

- Particles at opposite positions on a wavefront satisfy the structural dependence.
- There is no superluminal action or wave collapse.

- What QM calls "entanglement" is a consequence of 3S+T geometry and the function f .
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3.4 Choice of metric and dual universes

- Metric $(- + + +)$: time special, facilitates causality and ds/dt .
- Metric $(+ + + +)$: equivalent dimensions, interpretable as complex numbers:

(t, i, j, k)

- Dual real/imaginary universe, maintaining coherence and allowing generalizations.
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4. Conclusion

- Space and time are independent only for $v = 0$; otherwise, they are structurally dependent, measured by $v = ds/dt$.
- The function f defines all of 3S+T deterministically.
- Entanglement and antipodal phenomena explained without chance or collapse.
- This framework constitutes a **new physics**, overcoming limitations of quantum mechanics and opening new conceptual windows.

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Fuente: EN_3_entrelanzamiento.md