

# Reading Relativity

Artist’s Proof 52

Notebook IV – Forces and Constants – beside AP10

*One record, many readings: the kinematics of relativity from the axiom*

The 420 Code – Studio G

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## Artist’s Note

Relativity is something that has always just made sense to me. From the moment I was introduced to phenomenology, relativity made sense. Merleau-Ponty in particular shaped how I understand this body’s interaction with the world. Shortly after that my obsession with quantum mechanics – I call it the wave side, or pure potential – and with Einstein’s relativity – I call it the particle side, or the record history – began.

This paper is what comes after twenty-five years of thinking about the same things, over and over.

The mathematics in it is a hundred years old. It belongs to the people who did it. What is mine is the picture the premises come from. And one sentence the mathematics could not say on its own. There is no now to agree about, because the now is not a record. It is the moment we all write and read from. No one reads it. We share the now. We do not share a reading of it.

The description continues.

*the420code.org*

*Copyleft 2026. Don’t be a cunt. Be kind.*

# Orientation

Special relativity's kinematics follows by a standard argument from four premises. No site is privileged. Space is homogeneous and isotropic. There is a finite invariant speed. Readings compose consistently. That argument is a century old. Its content: the invariance of c, the relativity of simultaneity, the dilation of time, the contraction of length, the Lorentz transformations, the Minkowski signature. The work has claimed the conclusion since AP10. A Lorentzian manifold with signature (–, +, +, +). The light cone from Axiom C. Time as R's one irreversible direction. It has owed the derivation, under KS-D.4.

This paper does not re-invent the argument. It supplies the four premises from the axiom. Each with its reason in the hourglass. Then it runs the standard argument once, in the work's words. It takes the signature as its invariant. Where the work adds something, it is in the premises, not the mathematics. Distance is the record light writes. So the one-way speed is a unit. That the echo is the same in every direction at every site is the picture's ruling, and it is what excludes Galileo. A site's time is its own record count. Motion is settling relative to the landscape. The case this paper treats is uniform settling. And simultaneity is a reading. Never a fact of the record. No site can read any now – its own included – only what has landed. The last is the pupil of AP51, generalised. It is how one now, shared by every operator as the moment it writes and reads from, can have no shared reading. KS-D.4 is addressed on the face, at the register it is paid at. Gravity – the neck as what curves the reading; non-uniform settling – is the next paper.

**The describing of 9 September 2026, which this paper stands on.** "The break in the mirror – the $+1\times\varepsilon$ – the breaking of symmetry itself – happens with the first record; thereafter records are written always in one direction. For a record to be written or read, the reading and writing is always relative to the record history – as a forced structural condition and fact – from a specific perspective and coupling configuration from within the record history itself. The reading is read in light: information is propagated and transferred as light – that is also C. Light is not a separate property of the interior; it is a structural property that is also a constraint mechanism. Mass, resistance and gravity are the other structural properties that are also constraint mechanisms. Alpha is how the world of the possibles actualises in the world of records. The universe is a process of records – the universe is record-keeping – and that phase coupling capacity only means anything relative to the record history and where the operator stands relative to it. There is no single absolute position; no perspective has a higher priority than another. The only absolute is relativity – or: the only absolute reality is a general relative reality."

**Notation.** c is one click a moment. The tick of the neck. It is a unit throughout (§3). A site is an operator: a held configuration of grains with its own neck and its own record history (AP51). The crossing record between two sites is the number of ticks a grain takes to pass from one to the other (§3). A site's count is its own record history's length in ticks (§4).

Settling is motion. Uniform settling is the case in which a site's place in another's reading changes by a constant v per tick (§5). A site's coordinates for a distant event – any event from which a grain can reach it – are a reading. The site's own count at arrival, less the crossing record the grain took (A.1). They are not a fact of the record. The signature of the invariant is (−, +, +, +) throughout. The minus is on R's direction (§7, A.7).

# 0 – Dependency and Scope

## 0.1 – What this paper does

It supplies the four premises of special relativity's kinematics, from the hourglass and the describings of 9 September 2026, each with its reason. No site reads the record as it is (§1). Every operator has its own neck, while the record is one and the now is one (§2). Distance is the record light writes, so c is a unit (§3). A site's time is its own record count (§4). Motion is settling relative to the landscape, bounded strictly below one grain per click because a site is held and only the unheld crosses at the tick; the case run in §7 is uniform settling (§5). It derives, from the pupil, that simultaneity is a reading and never a fact of the record (§6). It runs the standard argument once on those premises. It takes the Lorentz group and its invariant. It reads the sign of the signature from R's irreversibility (§7). It addresses KS-D.4 at the structural register, and says exactly what register that is. It contains no number.

## 0.2 – Dependencies

AP10 (The Dimension) – §0.3 (Axiom C as the finite invariant rate; R as the one irreversible direction; the three spatial faces), §1 (the Lorentzian manifold claimed), §4 and KS-D.4 (the signature read from reversibility; the metric-level derivation owed), §0.7 (SO(3), no preferred axis). AP03 (The Ratio) – $c^2 = \beta/\alpha$ (its equation 4.1); c finite by Axiom C (§0.3); the Lorentz group with c as the invariant velocity named there. It is used for c's identity only. §3 derives c as the unit from Axiom C and the crossing record without it. AP48 (The Assembly) – the ropes slack from the first record, taut when the building is up; each record written at one per site per tick. AP20 (R as a monoid; the independence of the axioms). AP01 (the now). Ø Dissolutions Chapter 11 (the AS singular; every site a local cross-section). AP50 (the neck as the grain's own aperture; one grain per click; the tip). AP51 (the operator; position as record history; the pupil). The standard derivation of the Lorentz group from the principle of relativity, homogeneity and isotropy of spacetime, and the requirement that the transformations compose as a group: W. v. Ignatowsky, "Einige allgemeine Bemerkungen zum Relativitätsprinzip", Physikalische Zeitschrift 11, 972 (1910), and its modern statements, of which J.-M. Lévy-Leblond, "One more derivation of the Lorentz transformation", American Journal of Physics 44, 271 (1976), is the cleanest. Cited as standard. Not re-derived. Lévy-Leblond's fourth constraint is a causality condition. Here that constraint is R. The finite invariant speed is supplied by §3 rather than derived. So the Galilean contraction is excluded before the theorem runs. The describings of 9 September 2026, quoted where used.

## 0.3 – What is claimed and what is refused

**Claimed.** The four premises. Each from the picture. Each ruled or derived as §0.5 says. The standard argument's conclusion on those premises. The sign of the signature from R. The relativity of simultaneity as the pupil generalised. That KS-D.4 is paid at the structural

register: the premises derived, the metric-level argument the standard one, cited and written out.

**Refused.** Any number. General relativity, the equivalence principle, accelerated settling, the field equation (AP43-D1). Those are the next paper. §5 feeds §7 uniform settling only. That the argument of §7 is the work's. It is not. The paper says whose it is. That KS-D.4 is paid in full. Appendix A writes the argument out in the work's terms. So the transformations and the signature are derived on the page from the premises. What is not here is a derivation of the crossing record as the record algebra's own distance function, from that algebra alone. §7 names it as what remains. Determinism or its absence (Dissolutions Chapter 12). That awareness is derived. That is AP51's. Its debts stay there.

## 0.4 – Honesty box

The reviewers of the two papers before this one said the same thing. The hourglass must read structure not yet formalised. Otherwise it is only a compression device. Relativity was the test. The test is not blind, and the paper does not pretend it is. I have known relativity for twenty-five years (Artist's Note). The describings of §§1–5 are a reading of its premises in the picture's words. They were given on 9 September 2026, in reply to five questions that named no formula. They are quoted where used. The desk wrote nothing until it had them. What the paper claims is consistency. What would have counted as failure is named: a describing that forced a second ruler, a readable now, or a reversible count. None did. What the desk then did is the least it could. It identified each describing with the standard premise it supplies. It said why it supplies it. It let a century-old theorem run. Two of the premises the picture supplies by ruling, and §3 says which: that the echo is the same in every direction at every site, and that the crossing record is distance. Sound is a ruler too, in a world with a shared now; what excludes that world is the echo, ruled.

## 0.5 – Epistemic status per section

| § | Content | Status |
|---|---|---|
| 1 | One record, many readings; no privileged site | RULED; DERIVED (from R and the pupil) |
| 2 | Every operator has one neck; one now, from which every operator writes and reads; no reading of it | RULED; the reconciliation with the one AS DERIVED; the absence of a readable now a corollary of the definitions |
| 3 | Distance is the record light writes; c a unit; homogeneity and isotropy | RULED (distance); DERIVED (the invariance of c as a unit); AP10 (isotropy) |

| § | Content | Status |
|---|---|---|
| 4 | A site's clock is its own record count | RULED; DERIVED (no third count) |
| 5 | Motion is settling; the bound because a site is held; uniform settling fenced | RULED (settling; a site is held; the bound in the settled hourglass); DERIVED (the bound from the holding); RULED as scope (uniform) |
| 6 | Simultaneity is the pupil generalised; one now, one record-order, no readable now | DERIVED from AP51 §5, §§2–3 and A.1; the record/reading theorem DERIVED |
| 7 | The Lorentz group; the invariant (–, +, +, +); the sign from R; KS-D.4 | STANDARD, cited and written out (Appendix A); the sign DERIVED from R; KS-D.4 PAID at the structural register, narrowed at the formal to one identification |
| 8–10 | Plain words; refusals; switches | – |

## 0.6 – Kill-switch summary

Armed at lock: KS-REL.1 (no privileged site), KS-REL.2 (light is the ruler), KS-REL.3 (no third count), KS-REL.4 (the sign). KS-D.4 addressed (§7). Full text at §10.

## 0.7 – Items held open without claiming debt status

What KS-D.4 names beyond Appendix A. That the record algebra of AP10, on its own, yields the crossing record as its distance function. That is the one identification Appendix A takes from §3 rather than from the algebra. Gravity as the neck (AP53).

## 0.8 – Structural relationships

Upstream: AP10, AP03, AP20, AP01, Dissolutions Chapter 11, AP50, AP51. Downstream: AP10's dated note (KS-D.4). The gravity paper (the neck as what curves the reading; non-uniform settling; AP43-D1). AP51 §7, closed on the targets named there.

## 0.8a – AP51 §7, ticked

AP51 §7 asked this paper for three things. First: which readings are the grain's and do not change with the site – the six constraints (AP50 §3; AP51 §4) – and which are the site's and do: time (§4), distance (§3), simultaneity (§6). Closed. Second: whether relative measurement reproduces the invariance of c and the relativity of duration and of order, meeting AP10.

Closed at AP10 (§7, Appendix A) and at AP03 ($c^2 = \beta/\alpha$, finite by Axiom C; verified). Third: how one now and one neck sit with the relativity of simultaneity. Closed at §6. The now is shared as the moment every operator writes and reads from. What is not shared is any reading of it, a site's own included. The order is the record's. The now has potential. Nothing else AP51 §7 named is claimed.

## 0.9 – Definitions

- **Site.** An operator. A held configuration of grains with its own neck and its own record history (AP51). "Each operator has one neck – we are all the eyes of the universe."
- **The record.** One. "The record history is the record history – it simply is – one record exists – it is an absolute fact."
- **A reading.** A site's coupling to a held record from where it stands. Always relative to the record history and to the site's position in it. Always now.
- **The tick.** One click a moment. One grain through a neck. The unit of both distance and time (§3). c.
- **The crossing record.** The number of ticks a grain takes to cross from one site to another. Distance (§3).
- **A site's count.** The length of its own record history in ticks. Its time (§4).
- **Settling.** Grains falling, rolling and coming to rest relative to the landscape, and the landscape changing under them. Motion (§5). Uniform settling: a site's place in another's reading changing by a constant v per tick. The case §7 runs.

# 1 – One Record, Many Readings

*The principle of relativity is the first premise. The picture gives it as a forced condition. Not a postulate.*

**Claim.** The record is one and absolute. Every reading of it is from a site. Relative to the record history. Relative to the site's position in it. No site's reading is the record as it is. No perspective has priority. That is the principle of relativity. It follows from the axiom.

**Intuition.** Nobody stands outside the hourglass. Every reader is a pile of the same sand, reading from where it landed. The pile can be sure the record exists. It is made of it. It can never read it from nowhere.

**Givens.** The axiom (one record exists). AP20 (denying the record writes another). AP51 §§4–5 (position is record history; the pupil). Dissolutions Chapter 11. The describing.

**Ruling.** "For a record to be written or read, the reading and writing is always relative to the record history – as a forced structural condition and fact – from a specific perspective and coupling configuration from within the record history itself." "There is no single absolute position – no perspective has a higher priority than another." "The only absolute is relativity – or: the only absolute reality is a general relative reality."

**Theorem – no privileged site.** A reading is a coupling by a configuration of grains to a held record (AP51 §2). The configuration is inside the record. It is made of landed grains. It reads from its position, which is its record history (AP51 §4). A reading from no position would be a reading by no configuration. Every configuration is inside the record. And a coupling with no second grain is half an event. It has no reading (AP50 §5). So there is no reading of the record as it is. There are only readings from sites. No site's reading can be privileged over another's. What would privilege it – a position outside the record – does not exist. The record is one and absolute. The readings are many and relative. The absoluteness of the one is exactly why no reading of it is. This does not deny local rest. Every site is at rest relative to its own landscape (§5). It denies a reading from nowhere. What would privilege a site from inside – a site at which the six constraints or the neck's rate read differently – does not exist either: the constraints are the same at every site (AP51 §4), and the echo is the same at every site whatever its settling (§3). The record's one order (§2) privileges no site, because no site reads it (§6).

**Grade.** Ruled. Derived from the axiom and AP51. Premise (i) of §7.

**Kill switches**

> KS-REL.1 — No privileged site. Fires if a site is shown whose reading is the record as it is. A reading from no position. An absolute frame. LIVE — STRUCTURAL.

*One record, absolutely. No reading of it, absolutely.*

# 2 – Every Operator Has One Neck

*The question that decides simultaneity. One now for the universe, or one per site? The answer given, and how it sits with the one AS.*

**Claim.** Every operator has its own neck. Its own aperture. Where it writes and reads. The record is one. The apertures onto it are many. The now is one: the moment every operator writes and reads from. It is not a record. No site reads it as one.

**Intuition.** The Eye of the Universe is not one eye. “We are all the eyes of the universe.” Each pile looks through its own opening at the one sand. All at once. Now.

**Givens.** AP50 §2 (the neck is the grain’s own aperture – one in kind, one in measure). AP50 §9 (the record is one sequence, one grain after another). Dissolutions Chapter 11 (the AS singular; every site a local cross-section). AP51 §2 (the operators many). The rulings.

**Ruling.** “Each operator has one neck – we are all the eyes of the universe.”

**Theorem – one record, many apertures.** The neck is the grain’s own aperture (AP50 §2). One in kind and one in measure, because there is one grain. The operators are many (AP51 §2). Each writes and reads through the grain’s aperture at its own site. So there are as many necks as operators. All the same aperture. The record they write is one. One sequence, totally ordered (AP50 §9). The AS is singular (Chapter 11). Every site reads a local cross-section of the one AS, at the resolution the site can read. There is no contradiction between “the neck is one” and “each operator has one neck”. The first is the aperture. The second is the sites. There is also no contradiction with AP51’s “we share the now.” The describing, on the walk: “Now is always one grain – expressed as trillions of grains from now – but now is one grain, one dimensionless now; every operator experiences the same now, the same one grain; not many nows – one now, one grain of sand.” And on the second walk: “The now is the shared moment from where the operator writes and reads. The reading and the writing is the same event, actualised differently – I am reading as I am typing these letters now, and now has moved to now. The moment is shared; the actualisations differ.” So what is shared is the now. One AS. One tick. One coupling capacity. One grain through the neck. The moment every operator writes and reads from. One event at every site. What is not shared is a reading of it. The now is not a record. It is where records are made from. It has potential, where the record has order. Each site writes and reads at its own neck. It cannot read the grain in it as a record (AP51 §5). What it reads of any other site is a held record that arrived at the tick (§3). So “each operator has its own neck” means each writes and reads the one now at its own site. It does not mean each has a now it can read as a record. It does not mean two sites share a readable simultaneity slice of the one AS. The one AS is never read as one. It is read at each neck, as what has landed there.

**Grade.** Ruled. The reconciliation of one aperture with many sites derived. The absence of a readable now a corollary of the definitions. Premise for §6.

*One sand, one now, one grain. Many eyes, all writing and reading from it. No eye sees the grain in its own opening.*

# 3 – Light Is the Ruler

*The premise that makes the picture Lorentzian and not Galilean: there is a finite invariant speed. In the hourglass it is not a fact about light. It is what distance is.*

**Claim.** Distance between two sites is the record a grain takes to cross from one to the other at the tick. So distance and time are one measure: the tick. c is a unit, not a value. It is invariant because it is what the ruler is. There is no other ruler. Space is homogeneous and isotropic because the grain is the same grain everywhere, and the three faces carry no preferred axis (AP10).

**Intuition.** How far away is the other pile? As far as it takes a grain to get there, one click a moment. There is nothing to lay alongside that count. No space before the record. No ruler but the record light writes. Ask two sites how fast the grain crossed. Each says: one click a moment. They cannot say otherwise. That is the unit they are asking in. In a laboratory that still keeps two standards, a second and a metre, the same fact wears a number. Here there is one standard, the tick. The number is one. Nothing in the argument depends on which way it is written.

**Givens.** Axiom C (AP10 §0.3: the finite invariant rate; the light cone). AP03 §4.1 ($c^2 = \beta/\alpha$; verified). AP10 §0.7 (SO(3), no preferred axis). AP50 §1 (one click a moment). AP51 §4 (the constants universal). The describing.

**Ruling.** "Distance is the grain crossing at the tick – distance is the time the grain has travelled relative to the AS, relative to now; from the now, distance never stops accumulating." "The reading is read in light: information is propagated and transferred as light – that is also C. Light is not a separate property of the interior; it is a structural property that is also a constraint mechanism."

**Theorem – c is a unit.** A site reads another only by the held records that reach it (AP51 §5; §6 below). A record reaches it at the tick. Never faster (Axiom C). So the only measure a site has of another's distance is the count of ticks a grain took to arrive. Distance is the crossing record. Time is the count of ticks at the site (§4). Both are counts of the same tick. Therefore the speed of the grain that crosses is one tick per tick. At every site. For every site. A unit. It cannot vary between sites. It is not a quantity a site measures against something else. It is the something else. The invariance of c is not a postulate here. It is not a coincidence of nature. It is the statement that there is one ruler and it is light. A picture with two rulers is not the hourglass. One thing in this is ruled and not measured. What a site measures is the echo: a grain sent and returned, the round trip halved (A.1). That the one-way rate is the same in every direction is AP10's isotropy, and it is a ruling of the picture. Sound is a ruler too, in a world with a shared now. What excludes that world is the echo being the same in every direction at every site. The picture supplies that by ruling. "From the now, distance never stops accumulating" is the light cone. What a site can read is bounded by how many ticks have passed since now. The bound grows one tick per tick.

**Theorem – homogeneous and isotropic.** The grain is the constant (AP50 §10). The six constraints are the same at every site (AP51 §4). So no place in the landscape reads differently from another, except by what has landed there. That is the site's history. It is not a property of space. The three spatial faces carry SO(3). No preferred axis (AP10 §0.7). Premise (ii).

**Grade.** Distance: Ruled. The invariance of c as a unit: Derived from the ruling and Axiom C, with the one-way rate's sameness in every direction ruled (AP10). Isotropy and homogeneity: AP10's. Premises (ii) and (iii) of §7.

**Kill switches**

KS-REL.2 — Light is the ruler. Fires if a second ruler is shown. A measure of distance between sites that does not reduce to a crossing record at the tick. Or a signal shown to cross faster than one grain per click. LIVE — STRUCTURAL.

*Light does not have a speed. Light is what speed is measured in.*

Figure 1 — a site's reading: the tick as the cone, a settling site, and a distant event read by the crossing record

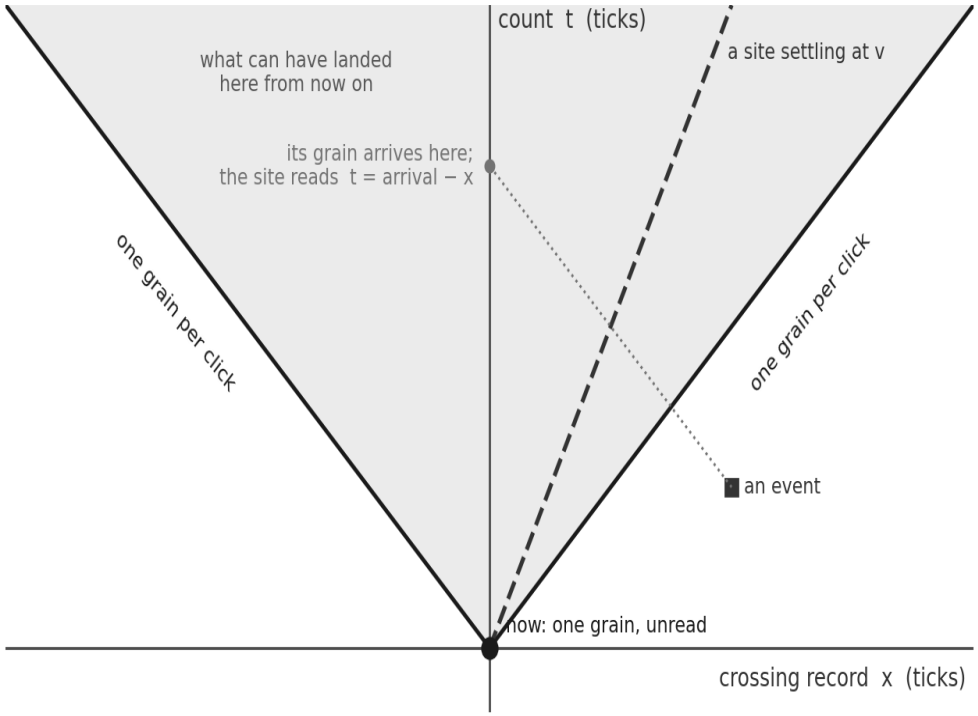



*Figure 1 – a site's reading. The tick is the cone: one grain per click. What can have landed at the site from now on lies inside it. A site settling uniformly is the dashed line. A distant event is read by the count at which its grain arrives, less the crossing record it took (A.1). The grain at the origin is the now. It is unread.*

# 4 – A Site's Clock Is Its Own Record

*Proper time, in the picture: how many grains have landed here.*

**Claim.** A site's time is its own record count. The length of its record history in ticks: its own ticks, one per site per tick (AP48 §1), not the arrivals it happens to receive. Two sites carry two counts. There is no third count against which either is right. There is no site outside the record to keep it. Time dilation, when §7 runs, is the difference between two counts between two couplings.

**Intuition.** Your clock is your pile. It counts the grains that have landed on you. Mine counts mine. When we meet and compare, the counts differ. They differ by what each of us has been through. There is no third pile keeping the true count. Every pile is inside the sand.

**Givens.** AP50 §3 (time is the record of the hold; a unit of relative measurement, record relative to other records). AP51 §4 (a site's position is its record history). AP20 (R's one direction). The describing.

**Ruling.** "Each operator experiences time relative to its perception of the record history – there are many operators sharing a relative perception of the record history over time. The record history is the record history – it simply is – one record exists – it is an absolute fact. The reading and interpretation of the record history will always be relative, from a perspective relative to the record history – and that perspective is always expressed now, in the AS."

**Theorem – no third count.** Time is the record's measure of itself. Record relative to other records (AP50 §3). A site's time is therefore the measure of its own record. Its count. The record is one. Its readings are many (§1). A count is a reading. A site counting what has landed on it. A third count that adjudicates two sites' counts would be a reading from no site. §1 forbids that. So two sites, two counts. No fact of the matter about which is right. Only what each has held between the two events at which they compare. That difference is what §7 will call dilation. Say it plainly, because it is the sentence a reader gets stuck on. There is no third clock. Not a hidden one. Not a better one. Not one we have failed to find. A third clock would have to read a now, and no site reads any now – its own included (§6). It is the pupil again, said about clocks. Each of two sites reads the other's count as the slower one. Both readings stand. Neither is wrong. Asking which of them actually aged less has no answer while both settle uniformly. It gets one only when one of them changes its settling, and a change of settling is accelerated. That is the gravity paper, not this one.

**Grade.** Ruled. The absence of a third count derived from §1. Premise for §7's consequences.

**Kill switches**

> KS-REL.3 — No third count. Fires if a count is shown that adjudicates two sites' counts from no site. An absolute time. LIVE — STRUCTURAL.

*Your clock is your pile.*

# 5 – Motion Is Settling

*The describing the derivation most needed. Without motion there are no frames to relate.*

**Claim.** Motion is settling. Grains falling, rolling and coming to rest relative to the landscape. The landscape changing under them. One site moves relative to another when its place in the other's reading changes with the tick. The change is bounded strictly below one grain per click. A site is a held configuration. A holding has a rest frame: the site is at rest relative to its own landscape. What crosses at one click a moment is not held. It is the ruler: the unheld grain, falling free, not yet a record (AP50 §1, §8). A held thing cannot go at the rate of the unheld. The bound holds in the settled hourglass, after the ropes pulled tight (AP48 §1: slack from the first record; taut when the building is up). Settled is never still. Settling settles into settled states, which are themselves settling. Stillness is a reading: our perception of a coupling configuration being held. The process is the variable. The grain is the constant. The case this paper feeds to §7 is uniform settling: the place changing by a constant v per tick. Accelerated settling is the neck as what curves the reading. That is the next paper.

**Intuition.** Nothing in the hourglass moves except by landing somewhere else. Two piles are moving apart when it takes more clicks each moment for a grain to get from one to the other. Moving together when it takes fewer. Neither pile is at rest in any absolute sense. Each is at rest relative to its own landscape. The landscape is the sand that already landed.

**Givens.** §3 (distance is the crossing record). §4 (time is the count). AP50 §1 (a grain falls free but never faster than one click a moment; where a grain lands depends on the landscape). The describing.

**Ruling.** "Grains fall, roll and settle. The settling is always relative to the landscape. The settling changes the landscape – the settling is always relative to the landscape – and so on. The process is the variable; the constant is the grain of sand." And, on the walk: "Settling happens at different rates – the speed of the settling is read relative to the crossing record per tick."

**Theorem – velocity and its bound.** Let a site S read another site S′ by the rule of A.1. S″s place x is the crossing record a grain from S′ took. The count assigned to its leaving is the arrival count less that crossing record. S′ moves relative to S when x changes with the assigned count. Its velocity is that change per tick. A ratio of two counts of the same tick. A pure number. It is bounded. The bound is not the rate at which a one-way crossing record can grow. For a receding site that grows faster than one tick per tick. It is the Doppler stretch of arrivals. Nothing forbids it. The bound is that S′ is held. A site is a held configuration of grains (AP51 §1). A holding has a rest frame: the site is at rest relative to its own landscape (§1). Its place is where its grains are held. What crosses at one click a moment is not held: the unheld grain, falling free, not yet a record (AP50 §1, §8). It is the ruler, not a site. A held thing cannot go at the rate of the unheld, and the picture says why. Held means the site's grains exchange with one another, and an exchange is a grain crossing between them at the tick (AP50 §5). A

configuration whose place changed one crossing record per tick could not complete an exchange across its own extent: the crossing grain would never arrive. So it would not be held. So the place of a site cannot change as fast as one tick per tick. Relative velocity lies in the open interval from minus one to one, in units of the tick. $|v| < c$, strictly, as A.1 requires. That a site is held is the condition. It is the picture's, and it is ruled, not derived: the glass is a held configuration of sand. A pile can travel as fast as its fastest grain only by ceasing to be a pile. The describing: "Of course it is bounded. The only time it was not bounded was while the hourglass was tipping and the grain was in free fall – the horse ran unbounded until the ropes pulled tight – then it is bound. Unboundedness does not exist any more." And on the second walk: "Settling settles into settled states, which in turn are settling – it is never truly still; stillness is our perception of the coupling configuration being held." The bound is a fact of the settled hourglass (AP48). This paper reads only the settled hourglass. There is no absolute rest. A site is at rest relative to its own landscape and to nothing else (§1). The only positions are record histories (AP51 §4). If v is the same at every tick of the reader's count, the settling is uniform. The two sites are the pair §7 relates. If v changes with the count, the settling is accelerated. That is refused here (§9).

**Ruling – energy (9 September; recorded here, used in the gravity paper).** "The record history is fixed; the now has potential. The record history is actualised potential – potential actualised as a specific coupling configuration. Energy is measured now relative to the record history: the record history is actualised energy, and energy is the relative relationship between the potential of now and the actualised coupling-configuration record history. Its propagation is bounded and constrained by that actualised record history and the coupling configurations held now." This paper uses only the bound. What energy is, in the picture, is the next paper's.

**Grade.** Settling, that a site is held, and the bound as a fact of the settled hourglass: Ruled. Velocity as the change of a site's place per tick, and its strict bound from what holding is: Derived. Uniform settling as the scope of §7: Ruled. Energy: Recorded.

*Nothing moves except by landing somewhere else.*

# 6 – Simultaneity Is the Pupil Generalised

*The paper's own sentence. Not a consequence of the transformations. Their reason.*

**Claim.** No site can read its own now. The grain in its pupil has not held (AP51 §5). No site can read another site's now either. Same reason, and one more. What reaches it from another site is a held record. It reaches it at the tick. Never faster. So there is no reading of "now" at any site. Only the site's own writing and reading, which it cannot read as a record. Every other now arrives as record, delayed by the record it took to arrive. "Simultaneous" is therefore a reading. Never a fact of the record.

**Intuition.** You cannot see your own pupil. You cannot see mine either. What you see of me is light that left me some clicks ago. So when you say two things happened at once, you are not reporting the record. You are reporting your reading of two arrivals, corrected by the one rule. Another pile, elsewhere, reads two other arrivals and corrects them the same way. It says otherwise. Neither is wrong. There is no now to be right about. There is nothing to read.

**Givens.** AP51 §5 (the pupil; a record is readable only once held; the neck's grain has not held). §2 (each operator its own neck). §3 (records cross at the tick). A.1 (the reading of a distant time-count). Ruled.

**Ruling.** "One site is always the localised reading of the other – and the distance and information at and between those sites is constrained by the speed of light." And, on the walk: "Ticks only make sense relative to the other grains of sand – to the record history. One grain only develops meaning relative to the other grains. Meaning develops from the observation of the record-history landscape; it is an interpretation relative to the landscape itself, and it is a process of development, not an end destination or something forced from outside – the grains making sense of the grains of the landscape relative to their localised positions. The grains share the awareness; experience will vastly differ."

**Theorem – simultaneity is a reading.** A site has two things of its own without any convention. Its count. The crossing record to another place (§§3–4). What it does not have is the count at which a distant event happened. It cannot read another site's now (AP51 §5; §2). It reconstructs one. It uses the only rule the record gives it. The count at which the event's grain arrived, less the crossing record the grain took (A.1). That reconstruction is a reading. It is not a fact of the record. The rule uses the one ruler of §3. It is the rule every site uses. Now let two events occur at two places. Let two sites in uniform relative settling each reconstruct their counts by that rule. Appendix A shows what follows. The two sites assign the two events different separations in count. They can assign them opposite orders (A.8: $\Delta t' = -\gamma\, v\, \Delta x$). This is not the order in which grains happened to arrive. A world with a shared now and slow signals has arrival-order differences too. It corrects them away. Here the corrected orders themselves differ. No third reading adjudicates them. A third reading would have to read a now. There is none to read. So "at the same time" names a relation between reconstructions at a site. Different sites reconstruct differently. There is no fact of the matter about whether

two distant events are simultaneous. “Simultaneous” would require comparing two nows. No now can be read. What the record fixes is the interval (§7). The relation between two events every site reads the same. It is written in the record, not in the reading. The relativity of simultaneity is not, in this picture, something the transformations do to time. It is what time is when it is a reading.

**Theorem – one now, one record-order, no readable now.** Two things are one. They are not the same thing. The record is one sequence, totally ordered (AP50 §9). Grain after grain, kept. That order is a fact of the record history. The record history is fixed. “Record-keeping has a very definite order.” The now is one too. One grain. One tick. The moment every operator writes and reads from. It is not ordered. It is potential. “Now is potential; the record history is actualised potential.” The order belongs to what has been kept. The now is where keeping is done from. Neither is a readable now. No site reads the grain in its own neck as a record at the instant it writes and reads (AP51 §5). No site reads another site’s executing grain. What arrives is a kept record. It arrives at the tick (§3). So the record’s order is not available to any reading as a shared simultaneity slice. A pair of events the record keeps one after the other, neither reachable from the other by a grain, can still be reconstructed by one site in that order and by another in the reverse. A pair where one depends on the other cannot (§7). What every site does read the same is not a now. It is the interval (§7). The Lorentzian manifold AP10 claimed is the structure of those readings. The maps under which every site’s counts transform. The quantity they all read the same. It is not a claim that the record has no order. The order is the record’s. It is the thing no reading is. This is how AP51’s “we share the now” and this paper’s “no readable now” are one sentence at two registers. The now that is shared is the moment reading and writing are done from. One grain. Every operator at it. The now that is not shared is any now a site could read as a record. There is none. The now is not a record. Said in the describing: one now, one grain, always shared. Said by this paper: and never read. One thing is not settled here. Whether the record’s order enters any reading beyond the interval – whether it is bookkeeping, or does work – is not this paper’s. This paper claims only that no reading is it.

**Grade.** Both theorems Derived, from AP51 §5, §§2–3 and A.1. The paper’s own.

*You cannot see your own pupil, and mine reaches you late. The record has an order. The now has potential. No reading is either. There is no now to agree about, because there is nothing to read.*

# 7 – The Standard Argument, Once

*Whose it is. What it needs. What it gives. And the two premises the work supplies to it: the finite speed and the sign.*

**Claim.** On premises (i)–(iv) – no privileged site (§1), homogeneity and isotropy (§3), a finite invariant speed (§3), and consistent composition of readings – the transformations between two sites' readings are the Lorentz transformations, with c as the invariant. The quantity every site reads the same is the interval, with signature (–, +, +, +). The sign – Lorentz rather than Euclidean – is fixed by R. Time is the one direction that cannot be reversed. No reading may rotate it into space and back. KS-D.4 is paid at the structural register.

**Whose argument.** Ignatowsky's, Physikalische Zeitschrift 11, 972 (1910), and its modern statements. Lévy-Leblond's "One more derivation of the Lorentz transformation", American Journal of Physics 44, 271 (1976), is the cleanest. Lévy-Leblond starts from the principle of relativity: equivalent inertial readings; transformations that form a group. He constrains those transformations by homogeneity of spacetime, isotropy of spacetime, the group law, and a causality condition. What survives is the Lorentz transformations and their Galilean contraction. The invariant speed is derived there. It may be infinite. This paper's packaging is slightly different. Stronger in one place. Weaker in none. Premise (i) is the principle of relativity, from §1. Premise (ii) is homogeneity and isotropy, from §3 and AP10. Premise (iii) is a finite invariant speed, from §3. So the Galilean contraction is dead before the theorem runs. Premise (iv) is composition. Causality is R. It is used only to fix the sign. The work adds nothing to the algebra of the theorem. It cites it as it stands. What it adds is why the premises hold, and which sign R forces.

**Givens.** Premises (i)–(iii) from §§1, 3. Premise (iv), consistent composition: a site's reading of a second site's reading of an event is that site's reading of the event; the maps between readings compose and invert. Stated, as the standard argument states it. AP20's monoid is the record composing, not the readings. §4 (counts). §5 (velocity). AP10 §0.3 and §4 (R's irreversibility carries the (–) character; KS-D.4). The "yes" to that reading, 9 September.

**Theorem – the Lorentz group on the work's premises.** Premise (i) is §1. Premise (ii) is §3's second theorem. Premise (iii) is §3's first. Here the work is stronger than the standard argument needs. The invariant speed is not a finite constant that happens to exist. It is the unit of distance itself. So the Galilean case – the constant infinite – is excluded by §3 before the theorem runs. Premise (iv) is composition. On these the theorem gives the Lorentz transformations, with the tick as the invariant speed. It gives the invariant interval between two events: minus the count squared plus the crossing record squared, read the same at every site. With the transverse faces, signature (–, +, +, +). Time dilation is then §4's sentence made exact. Each of two sites in uniform relative settling reads the other's count as the slower, by $\gamma$. Neither is wrong (A.8). Two couplings of the same two sites need one of them to change its settling between them. That is accelerated settling. It is the next paper's. Length

contraction is §3's. The crossing record between two sites at rest to each other, read from a site settling past them, is shorter. The composition of velocities keeps §5's bound. Two settlings compose to a settling that never reaches one grain per click.

**Theorem – the sign, from R.** The theorem's four premises leave one case open besides the Lorentzian. The standard argument closes it with a fifth: causality. No transformation may reverse the order of events along a site's own count. Here that premise is R. This is where it comes from. The open case is the Euclidean. There the transformations are rotations mixing distance and count freely. A reading could take a site's count into another site's distance and back. An event later in one reading could be earlier in another, with no bound. Axiom R forbids it. The record is written in one direction. It cannot be unwritten (AP20; AP50 §9: the order is total and well-founded). A reading is a coupling to held records (§1). It cannot read what has not landed (AP51 §5). So no reading can place an event's count before a record it depends on. The transformations must preserve the order of the record along every site's count. They may mix distance and count. They may not reverse the count. That is the hyperbolic case. The Lorentzian sign. The (–) belongs to the one direction that is R's. This is AP10 §4's reading. It was ruled again on 9 September. Now it stands on the argument rather than beside it. The transformations so obtained are maps between readings. They do not unwrite the record. They do not make the record's order a readable now (§6).

**What this does to KS-D.4.** KS-D.4 names two things. That the signature is read from the axioms' reversibility structure. That the formal metric-level derivation is owed. The first is paid here. The Lorentz group follows on premises each derived or ruled from the axiom. The sign follows from R. The second is paid as far as the premises allow, in Appendix A. It writes the derivation out on the page, in the work's terms, from linearity to the invariant. What it does not do is derive the crossing record as the record algebra's own distance function, from that algebra alone. It takes it from §3's ruling. KS-D.4 is therefore paid at the structural register. It is written out at the formal register. It remains live at the formal register, narrowed to that one identification: that the crossing record is distance, taken from §3's ruling and not from the record algebra. It is one identification, and it is the whole of the formal debt: a derivation of AP10's distance function from the record algebra is what KS-D.4 has owed since it was written. It is the only debt this paper does not close. On 11 September 2026 it was ruled a lemma to be derived, in a paper of its own: the record algebra's distance function from the algebra, and the crossing record shown to be it. Until that paper, KS-D.4 stays live at the formal register as the gate. The dated note on AP10 says exactly this.

**Grade.** The argument: Standard, cited, and written out in Appendix A. The premises: the work's, as §§1–5 grade them. The sign: Derived from R. KS-D.4: paid at the structural register; written out at the formal; one identification named as remaining.

**Kill switches**

KS-REL.4 — The sign. Fires if a reading is shown that reverses a site's count: an event read before a record it depends on. Or if the transformations between sites are shown to mix distance and count as rotations rather than boosts. LIVE — STRUCTURAL.

KS-D.4 (AP10) — PAID at the structural register and written out (Appendix A). LIVE at the formal register, narrowed to one identification: the record algebra's own distance function shown to be the crossing record. By dated note.

*The mathematics is a century old. It belongs to whoever did it. The premises are the sand's.*

# 8 – In Plain Words

*In plain prose.*

I have loved relativity since I was nineteen. I think I finally know why. It is the only theory that starts from where I stand. There is one record. That is the axiom. I have never doubted it for a second. And there is no place outside it to read it from. Every reader is a pile of the same sand, reading from where it landed. That is the whole of the principle of relativity. It is not a postulate. It is what you are left with when you refuse to pretend there is a somewhere else.

Light is not fast. Light is the ruler. How far away are you? As far as it takes a grain to reach you, one click a moment. There is nothing to lay alongside that count. So when two piles both say the grain crossed at one click a moment, they are not agreeing about a fact. They are both counting in the only unit there is. That is why c is the same for everyone. It is why the world cannot be Galilean – not because light is the ruler, since sound would be a ruler too, but because the echo comes back the same in every direction at every pile.

Your clock is your pile. It counts the grains that landed on you. Mine counts mine. There is no third pile keeping the true count. And nothing moves except by landing somewhere else. Grains fall, roll and settle. Always relative to the landscape. The landscape is what already landed. When the settling between us is steady, the rest is the old mathematics. When it is not, that is gravity. It is not this paper. So when you and I drift apart, each of us reads the other's pile as the slower one. Neither is wrong. If we meet again, one of us turned, and that is gravity's paper. That is time dilation. It is not strange. It is two readings.

And the one thing I can add to a century-old argument. You cannot see your own pupil. You cannot see mine either. What you see of me left me some clicks ago. So there is no now to agree about. When you say two things happened at once, you are reporting two arrivals at your pile, corrected the only way they can be. Another pile reads two other arrivals, corrects them the same way, and says otherwise. Neither of you is wrong. The order of the record is one and absolute. No one reads it from outside. And no one reads a now – not their own, not mine – because the now is not a record. It is the moment we all write and read from. That is the relativity of simultaneity. It is the pupil that cannot see the pupil, said for two. We share the now. We do not share a reading of it.

The rest is mathematics that other people did a hundred years ago. I cite them. What the sand supplies is why the premises hold. And one more thing the mathematics takes from outside itself: the sign. Time is the one direction that cannot be unwritten. No reading can turn it into space and back. That is the minus in the signature. It is R.

## 9 – What This Paper Does Not Claim

- Any number.
- General relativity. The equivalence of the held and the falling. The neck as what curves the reading. The field equation (AP43-D1). The next paper.
- Accelerated settling, whether from a pile or not. Refused here. Named so that §5 cannot be read as having fed it to §7. The gravity paper takes it up under the equivalence.
- That the record has no order. Or that the now has one. AP50 §9 keeps the record's order. §6 keeps the now as potential. Neither is a reading.
- That the argument of §7 is the work's. It is Ignatowsky's and his successors'. It is cited as standard.
- That KS-D.4 is paid at the formal register. The metric-level derivation inside the record algebra is named as remaining.
- Determinism or its absence at the forcing function's own resolution (Dissolutions Chapter 12).
- Anything about awareness beyond what AP51 already carries. The sentences on awareness in the describing of 9 September are AP51's. They go there.

# 10 – Kill Switches

*Armed at lock. Each is structural. Each names a counterexample that would keep the picture and kill the premise.*

## KS-REL.1 — No privileged site

**Claim.** The record is one and absolute. Every reading is from a site and relative to its record history. No site's reading is the record as it is.

**Test.** A site shown whose reading is the record as it is. A reading from no position. An absolute frame.

**Status.** LIVE — STRUCTURAL.

**Recovery.** Premise (i) fails. §7 reverts to AP10's claim without its derivation.

## KS-REL.2 — Light is the ruler

**Claim.** Distance is the record a grain takes to cross at the tick. c is a unit. There is no other ruler.

**Test.** A second ruler shown: a measure of distance not reducible to a crossing record. Or a signal shown to cross faster than one grain per click.

**Status.** LIVE — STRUCTURAL.

**Recovery.** Premise (iii) reverts to a postulate. The Galilean case is no longer excluded before the theorem runs.

## KS-REL.3 — No third count

**Claim.** A site's time is its own record count. Two sites, two counts. No count from no site.

**Test.** A count shown that adjudicates two sites' counts from no site. An absolute time. The record's one order (AP50 §9; §6) is not such a count. No site reads it.

**Status.** LIVE — STRUCTURAL.

**Recovery.** §4 fails. Dilation loses its reading. §7's theorem stands as mathematics, without the work's premise.

## KS-REL.4 — The sign

**Claim.** Transformations between sites preserve the order of the record along every count. They mix distance and count. They never reverse the count. The signature is Lorentzian. The (–) is R's.

**Test.** A reading shown that places an event before a record it depends on. Or the transformations shown to be rotations, not boosts.

**Status.** LIVE — STRUCTURAL.

**Recovery.** The sign is unfixed. KS-D.4 reverts to fully live. R's reading of the signature (AP10 §4) falls.

## 11 – Dated Notes This Paper Triggers

Beside the locked bodies, never in them. On a stated rule. One dated note per paper.
AP10 – The Dimension. §4 and KS-D.4: the signature's sign read from R now stands as the causality premise of the standard derivation, with its ground (§7 here). KS-D.4: PAID at the structural register; written out at the formal (Appendix A here); LIVE at the formal, narrowed to one identification – the record algebra's own distance function shown to be the crossing record, which is the whole of the formal debt. §1: the Lorentzian manifold claimed now stands on §§1–7 here.
AP51 – The Glass (no note): §7 there closed.

## Appendix A – The Argument Written Out, in the Work's Terms

*The standard derivation of the Lorentz group. Run once on the premises of §§1–5. Every step named to the sentence it stands on. Formulas, no numbers. The mathematics is Ignatowsky's. The words are the sand's.*

**A.0 – What this appendix assumes and what it derives.** It takes from the main text: distance as the crossing record (§3, ruled); time as a site's own count (§4); uniform settling as the case (§5); no privileged site (§1); homogeneity and isotropy (§3, AP10); consistent composition (§7). From A.1 it takes that a distant time-count is a reading, made by a stated convention. It does not re-derive these. On them it derives the transformations, the sign and the signature. It does not derive that the record algebra's own distance function, without §3's ruling, is the crossing record. That identification is what remains of KS-D.4 at the formal register (A.9).

**A.1 – Readings as coordinates, by the echo.** Two sites, S and S′. S′ settles uniformly relative to S. Its place in S's reading changes by a constant v per tick, with $|v| < 1$ (§5). A site has, without convention, one thing of its own: its count (§4). To read a distant event – any event a grain can reach and return from – it sends a grain and receives the echo. Let the grain leave at the site's count $\tau_-$ and return at $\tau_+$. The site assigns the event a crossing record $x = (\tau_+ - \tau_-)/2$, and a count $t = (\tau_+ + \tau_-)/2$. Along the line of settling, x is signed by the direction the grain went. That assignment is Einstein's construction of 1905, written in the tick. It is a reading, not a fact of the record (§6). It is the only rule the record supplies, since the crossing rate is the one ruler; and it halves the round trip because the one-way rate is the same both ways, which is AP10's isotropy, ruled (§3). The pair (t, x) so assigned is the site's coordinates for the event, so called. The transverse faces are set aside until A.6. Along the line of settling one crossing record suffices. The appendix assumes what the standard argument assumes: the readings vary continuously, the maps between two sites' readings are invertible, and they compose (§7, premise (iv)).

**A.2 – Linearity, from homogeneity.** No place in the landscape is privileged except by what has landed there (§3, second theorem). No count is privileged either. The tick is one in kind

(AP5Ø §1; Axiom C). R is a monoid of sequential composition (AP2Ø). So a translation along a site's count is not a change of structure. The map from S's reading of an event to S″s reading of it therefore cannot depend on where or when the event is. It is the same map everywhere. That makes it affine. With the two sites' origins taken at their one coincidence, it is linear: $t' = A\,t + B\,x$, $x' = C\,t + D\,x$, with A, B, C, D depending on v alone.

**A.3 – The settling site's own place.** S″s own place is $x' = Ø$. In S's reading it is the place $x = v\,t$ (§5). So $C = -\,v\,D$. Write $D = \gamma(v)$. Then $x' = \gamma(v)(x - v\,t)$.

**A.4 – Isotropy and no privileged site.** Reversing the direction of settling reverses the sign of every crossing record (isotropy, AP1Ø §Ø.7). The map for –v is the map for v with x and x′ both reversed. So $\gamma(-v) = \gamma(v)$, $A(-v) = A(v)$, $B(-v) = -B(v)$. No site is privileged (§1) and the landscape is isotropic (§3). S reads S′ as settling at v exactly as S′ reads S as settling at –v. So the map from S′ back to S is the map with –v. Composing the two is the identity. Working the composition through with A.3 gives $A = \gamma(v)$ and $B = -\kappa\,v\,\gamma(v)$. Here $\kappa$ is some function of v with $\kappa(-v) = \kappa(v)$. And $\gamma(v) = 1/\sqrt{(1 - \kappa\,v^2)}$. So: $t' = \gamma(v)(t - \kappa\,v\,x)$, $x' = \gamma(v)(x - v\,t)$.

**A.5 – Composition, and the constant.** A reading of a reading is a reading (§7, premise (iv), stated). So the map for a settling $v_1$, followed by the map for a settling $v_2$, each of the form of A.4, must again have that form, for some $v_3$. Written out: the product of the two maps has diagonal entries $\gamma_1\gamma_2(1 + \kappa_2 v_1 v_2)$ and $\gamma_1\gamma_2(1 + \kappa_1 v_1 v_2)$, and a map of A.4's form has equal diagonal entries; so $\kappa_1 = \kappa_2$ whenever $v_1 v_2 \neq Ø$, and the composed settling is $v_3 = (v_1 + v_2)/(1 + \kappa v_1 v_2)$. So $\kappa$ is one constant for all settlings. Three cases remain, by its sign.

**A.6 – The sign, from C and R.** $\kappa = Ø$ is the Galilean case. $t' = t$. No invariant speed. A site's place could in principle change faster than any bound. It is excluded before this appendix, by §3 and §5. Distance is the crossing record at the tick. The crossing rate is the one ruler. A held site cannot go at the rate of the unheld (§5). $\kappa < Ø$ is the Euclidean case. With $\kappa = -\,1/w^2$ the maps are rotations of the (t, x/w) plane, through an angle set by v. Rotations compose to any angle. Including angles at which a later count is read as an earlier one. An event read before a record it depends on. Axiom R forbids it. The record is written in one direction. It cannot be unwritten (AP2Ø; AP5Ø §9). A reading is of held records only (AP51 §5). So $\kappa > Ø$. The Lorentzian case, with invariant speed $1/\sqrt{\kappa}$. The one speed every site reads the same. That speed is the tick (§3). In the unit of this paper it is one. So $\kappa = 1$. Then $t' = \gamma(t - v\,x)$, $x' = \gamma(x - v\,t)$, $\gamma = 1/\sqrt{(1 - v^2)}$. Add the two transverse faces. They are unchanged by a settling along the line (isotropy, AP1Ø). That gives the Lorentz transformations of the (3+1) reading.

**A.7 – The invariant, and the signature.** From A.6 directly: $t'^2 - x'^2 = t^2 - x^2$ for every v. Call that form $I_0$. $I_0$ is preserved. So is $-I_0$. AP1Ø named one of them: $I = -t^2 + x^2$. With the transverse faces, $I = -t^2 + x^2 + y^2 + z^2$. A quadratic form of signature (–, +, +, +). The form is Lorentzian: one direction carries the odd sign and three carry the other. That is structural. R fixes which direction carries the odd sign: the one that cannot be reversed and cannot be rotated into the others. The overall sign – I rather than $I_0$ – is a convention, and the paper

writes it AP10's way. That is the Lorentzian signature AP10 §1 claimed and KS-D.4 owed. Derived on the page from §§1–5, with the direction from R. Only I is used from here on.

**A.8 – The consequences, named.** Dilation. A site at rest in S′ holds, between two events at its own place, a count $\Delta t'$. S reads it as $\Delta t = \gamma\, \Delta t'$. S′ reads S's count the same way. The reading is symmetric, and there is no third count to break the symmetry (§4). Which site holds fewer ticks between two meetings is set by which changed its settling. That is outside uniform settling (§5, §9). Contraction. Two sites at rest to each other, at crossing record L in their own reading, are read from a site settling past them at $L/\gamma$ (§3). Composition of settlings. $u' = (u - v)/(1 - u\, v)$. It never leaves the interval from minus one to one. §5's bound survives every composition. Simultaneity. Two events with $\Delta t = 0$ in S have $\Delta t' = -\gamma\, v\, \Delta x \neq 0$ in S′. That is §6's sentence in the formula.

**A.9 – What this appendix takes and what it derives.** It takes from §3 that the crossing record is the distance. An operational identification, ruled. It takes from §1, §5 and AP10 the premises A.2–A.5 stand on. It takes from A.1 that a distant time-count is a reading, not a fact. On those it derives the transformations, the sign and the signature. What it does not derive is that AP10's record algebra, by its own structure and without §3's ruling, has the crossing record as its distance function. That is the identification KS-D.4 remains live for at the formal register: the whole of the formal debt, named.

*The argument is a century old. Every line of it now stands on a sentence of the picture.*

## Claim Summary

Section 0. Contract with the reader. The four premises supplied from the axiom. The argument cited as standard. The sign derived. No number. The describings given before any formula was in view.

Section 1. RULED; DERIVED. One record, absolute. Every reading from a site, relative to its record history. No privileged site, because there is no position outside the record. Premise (i).

Section 2. RULED; DERIVED. Every operator has one neck: the grain's own aperture, one in kind, many in site. The record one. The apertures many. One now, one grain, the moment every operator writes and reads from. No reading of it.

Section 3. RULED; DERIVED. Distance is the record a grain takes to cross at the tick. c is a unit. It is invariant because it is the ruler. The Galilean case excluded. Homogeneity and isotropy AP10's. Premises (ii) and (iii).

Section 4. RULED; DERIVED. A site's time is its own record count. No third count, and no third clock – a third clock would have to read a now, and none can be read.

Section 5. RULED; DERIVED. Motion is settling relative to the landscape. Velocity the change of a site's place per tick. Bounded strictly below one grain per click, because a site is held and only the unheld crosses at the tick, in the settled hourglass. Never truly still. No absolute rest. Energy recorded for the next paper. The case §7 runs is uniform settling. Accelerated settling refused.

Section 6. DERIVED. Simultaneity is a reading and never a fact of the record. A reconstruction by the one rule, differing between settling sites, with no third reading. The pupil generalised. One now, one record-order, no readable now. The order is the record's. The now has potential. Neither is a reading. The interval is what every site reads the same. AP51 §7's reconciliation, closed.

Section 7 and Appendix A. STANDARD, cited and written out; DERIVED (the sign). The Lorentz group on the work's premises, every step named to its sentence. The packaging of the hypotheses stated against Lévy-Leblond's. Dilation, symmetric between uniformly settling sites; contraction; the composition of velocities – as §§3–5 made exact. The invariant $I = -t^2 + x^2 + y^2 + z^2$. The standard argument's causality premise supplied by R, fixing which direction carries the odd sign. The transformations maps between readings. KS-D.4 paid at the structural register, written out at the formal, one identification named as remaining.

Sections 8–11. Plain words. Refusals. Dated notes. Four switches armed at lock.

## Conditionality Footer

Everything above is conditional on the axiom and its locked developments. It is exactly as strong as they are. If AP51's pupil falls, §6 falls. If the crossing record is shown not to be the only ruler, §3 falls, and the exclusion of the Galilean case with it. If R's irreversibility is shown to permit a reversed count, the sign is unfixed. If uniform settling is shown not to be the case Appendix A ran, §7's application – not the theorem – fails and waits on the gravity paper. Nothing here is armed. There is no number to move.

*Dependencies. AP10 (§0.3, §1, §4, §0.7; KS-D.4). AP03 §4.1. AP48 §1. AP20. AP01. Ø Dissolutions Chapter 11. AP50 (§§1, 2, 3, 9, 10). AP51 (§§2, 4, 5). W. v. Ignatowsky, Physikalische Zeitschrift 11, 972 (1910); J.-M. Lévy-Leblond, American Journal of Physics 44, 271 (1976).*

*Dependents. AP10's dated note (KS-D.4 paid at the structural register; narrowed at the formal). The gravity paper (non-uniform settling). AP51 §7, closed. AP51 §2, where the same sentence now reads: we share the now, the moment we write and read from; we do not share a reading of it.*

*Kill switches. KS-REL.1–4, armed at lock. KS-D.4 addressed.*

## Provenance

Every claim, ruling and switch in this paper is mine. The five describings were given on 9 September 2026, in the returned primer, in reply to questions that named no formula. The desk identified each with the premise it supplies. It wrote nothing before it had them. Drafting under his direction the same day. His walk of v0.1 confirmed each section. It added the rates of settling and the relativity of the tick. It asked that the debt be paid as far as it can be, which is Appendix A. Three reviews of v0.2 were worked on 9 September, with rulings on the walk: the bound holds in the settled hourglass, and the now is one grain. His Artist's Note was drafted from his words the same day. On his second walk he ruled the now as the moment reading and writing are done from, the order the record's and not the writing's, stillness a reading, and retitled the paper Reading Relativity. The Kimi audit was worked the same day. Re-voiced in short sentences the same day, at his instruction. A fifth round of five reviews was worked on 10 September, narrowly, at his instruction. The rulings of 11 September 2026 were given in the chat and are recorded in the instrument beside this paper: the bound is ruled, and the absence of a third clock is said plainly. Content unchanged. Locked in the wave of the four. The switches armed at lock. P-GLASS.1 frozen where the paper says.

Version 1.1 · 2026.11.27