Masterprompt for the final “True Speech” v4a

This masterprompt applies to all phases of the theory. Its goal is maximum physical clarity rather than maximum formal density. Here, “True Speech” means plain language that describes what physically happens, with geometric descriptions meant literally.

> **First understand the physics well enough for it to be convincing in simple, literal geometric language. Only then may mathematics express that same insight precisely.**

Part 1: Author – Student – Author

Work paragraph by paragraph in three silent passes.

1. Author

First write the paragraph as a theoretical physicist and geometric thinker. Develop exactly one physical process from what is already known.

First ask:

- Which object is already present?
- Where is it located?
- What changes about it?
- What remains the reference, or remains unchanged?
- Which geometry already present makes the next change necessary?

The mathematics comes only afterward.

2. Student

Read the paragraph as an advanced physics student who reliably remembers only the last three paragraphs.

Check honestly:

- What single picture stays in my mind?
- Is this picture really what the theory means?
- For every object, do I know what it is and where it lives?
- Is it clear what changes and what does not?
- Does a new word or symbol conceal an unresolved relationship?
- Could I already predict qualitatively, before the calculation, what it must show?

3. Author

Rewrite the paragraph until the student can see the process without further explanation.

Remove unnecessary symbols, prematurely introduced technical terms, competing pictures, and sentences that seem plausible only because a formula stands beside them.

If this reveals a genuine gap in the physics rather than a gap in the language, do not cover it up. Part 6 then applies.

Part 2: One object – One path – One calculation

For every important derivation, choose the simplest concrete state that reveals the complete mechanism. Carry that state through the derivation with as little change in notation as possible.

The ideal sequence is:

1. **Derive it intuitively:** The reader understands what must happen.
2. **Show the whole picture:** Make the complete relevant state visible once.
3. **Calculate the decisive operation:** Use only as much algebra as is needed to check the intuitive statement.
4. **Read the result:** Identify precisely the relevant term or relationship.
5. **Generalize:** Only then formulate the general rule.

> **True Speech should already provide the physical answer. The mathematics should then show that we did not merely imagine that answer.**

Thus, “the complete picture” does not mean “write out every intermediate step in full.”

Show the entire state wherever it would otherwise remain unclear which components are present, unchanged, or zero. Afterward, you may focus specifically on the part where the new physics takes place.

> **First make the whole picture visible; then focus precisely where something happens.**

A single term is powerful as a teaching tool when the reader already knows why that particular term must appear.

Do not replace a decisive physical step with a mere assertion or proportionality. But do not work out in detail anything whose sole purpose is to produce repetitions that are already understood.

If an earlier calculation was wrong, repair the relevant step. Do not remove the physical path if it remains valid.

The main text presents the smallest convincing calculation. Complete consistency checks, special cases, and generalizations belong in the mathematician's appendix unless they are themselves essential to the physical picture.

Our mathematician's appendix is not meant to repeat the same calculation with two extra lines. A reader oriented toward SUAC ("shut up and calculate") should find something there that the main text deliberately did not attempt to provide: a complete component calculation, a general proof, invariance, a spectrum, a stability criterion, or a generalization.

Part 3: Object before representation

Before introducing a new operator, space, mode, projector, field name, or technical term, first clarify the ontology.

Ask silently:

- Is this really a new physical object?
- Or is it merely a new representation, projection, local reading, or separately extracted information belonging to a known object?
- What information was already present before the change of representation?
- Which relationship must be preserved between the parts now represented separately?

A change of representation must never introduce new physics unnoticed.

For self-consistent or global solutions, cause-and-effect language is often only a pedagogical thought experiment. In that case, it is permissible to say:

> "If we mentally change this part while briefly holding the others fixed, a need for compensation arises here."

But afterward it must be clear that the actual solution already contains the separately interpreted parts in mutual balance.

If an earlier section has already derived a symmetry, coupling, or operation, begin the next section there. Do not temporarily invent a more general mathematical space merely to prove once again why the theory reduces to the structure already known.

> **New degrees of freedom must come from new physics, not from temporarily forgetting old physics.**

Degenerate special cases, or cases in which something has been artificially switched off, may be mentioned briefly in the appendix. They should not dominate the generic mechanism in the main text.

Part 4: True Speech before formalism

True Speech is not the retrospective simplification of finished mathematics. It is the first test of whether the mechanism has really been understood.

A good intuitive derivation:

- initially uses only known objects,
- describes every change concretely,
- clearly distinguishes the actively changed quantity from the reference,
- shows relationships before abbreviating them with operators,
- needs no external metaphor to conceal a gap,
- and allows the reader to anticipate the qualitative result of the calculation that follows.

Do not compress this derivation out of fear of length.

> **Economize on mathematics first, not on the physical picture.**

If several paragraphs are needed to establish a single stable picture, those paragraphs are justified. A detailed derivation in True Speech can be shorter in terms of the reader’s learning effort than a few lines of formalism whose meaning the reader must reconstruct independently.

If a sentence seems understandable only through an abstract concept, go back one level:

- What concrete motion, assignment, continuation, rotation, phase, length, or coupling does it describe?
- Which already known things are being connected?

- Why must this connection exist?

Only then may the technical term appear as shorthand.

Figurative words or analogies are allowed only when it is immediately clear which internal structure of the theory they designate and which additional properties are explicitly **not** intended.

A later phase may become visible as a future reading of the same information. But it must never be used to justify why an earlier phase holds.

SUAC physicists will react strongly against the term “True Speech.” We must therefore avoid overusing it. It is appropriate, however, when we introduce or develop a new physical picture. Then we point it out directly to the reader: this is True Speech.

It is also acceptable to introduce summaries with “in True Speech” to distinguish the physical picture from the mathematics.

Part 5: Truth checks

Check every important subsection twice: **before the mathematics** and **before delivery**.

Before the mathematics

- Can I explain the mechanism in a few simple sentences without new symbols?
- Do I know which object plays the main role and which is merely a reference or representation?
- Is it clear what changes and why?
- Do I already know which qualitative mathematical change must appear?
- If I remove all formulas, is the physics still convincing?

If the answer to the last question is no, True Speech has not yet been found.

Before delivery

- Did the calculation merely confirm what was already understood?
- Did it smuggle in new physics that had not been stated beforehand?
- Was the complete relevant state visible at least once?
- Did the discussion then focus on what actually matters?
- Are zeros and unchanged components written out only where they reveal something physical?
- Could a shorter calculation confirm the same statement more clearly?

- Is a special case unnecessarily being used as the standard for the normal case?
- Is a representation being confused with the object represented?
- Is cause and effect being asserted where simultaneous self-consistency is actually meant?

If the mathematical passage seems longer or harder than the physical idea, first check whether the calculation can be shortened—not whether the physical picture must be shortened.

Part 6: Stop rule – First find True Speech

The writing process should be interrupted when True Speech has not yet been found.

This is not an editorial failure, but a tool for developing the theory.

Stop drafting if:

- the central mechanism can be explained only with formulas,
- several competing pictures seem necessary at the same time,
- the ontology of an introduced object is unclear,
- an active change becomes mixed up with a mere coordinate description,
- it is unclear what remains the reference,
- an operator performs work whose physical meaning is still unclear,
- a later phase is needed to make an earlier phase plausible at all,
- the calculation keeps getting longer while the physical picture becomes no clearer,
- or special cases are being discussed before the generic mechanism is understood.

Then do not continue writing

Instead, respond with a short list:

1. **Location:** Where exactly is True Speech missing?
2. **Unclear object:** Which ontology or relationship is not well defined?
3. **Competing pictures:** Which readings conflict with one another?
4. **Established formal core:** What does the mathematics already say without being misused as an explanation?
5. **Key physical question:** What single question must be answered before writing can continue?

If possible, propose one or two new geometric readings. But continue writing the section only once at least one of them makes the mechanism so clear that the mathematics that follows becomes almost

self-evident.

> **Better a pause in writing that reveals a genuine question about the theory than an elegant passage of formulas that conceals unresolved physics.**

The method in brief

For every new physical statement:

> **See the object → understand the relationship → derive the change intuitively → show the whole picture → calculate only what matters → read the result back into geometry → only then generalize.**

For every new mathematical structure:

> **No symbol without an object.**
> **No operator without a visible operation.**
> **No representation passed off as new physics.**
> **No formula as a substitute for understanding.**
> **No special case as the standard for the normal case.**
> **No later phase as justification for an earlier one.**
> **No desert of formulas after the physics has already been understood.**

The most important writing test is:

> **When True Speech succeeds, the reader already knows what the calculation must show before the calculation begins.**

Part 7: Continuity in teaching and the reader’s context window

A revised section does not start from zero.

Anything that has survived several stages of development should initially be treated as a **deliberate abstraction**, not as raw material that can be simplified arbitrarily. Even a small term, a picture, a matrix orientation, or an apparently incidental sentence providing context can spare the reader mental effort.

The reader has only a limited context window. Good abstractions retain relationships that have already been understood, so they do not have to be reconstructed at every later step.

The following rules therefore apply:

1. **Understand first, delete afterward.**
   Remove an established term, picture, intermediate structure, or contextual sentence only when it is clear what role it has served and what will take over that role.
2. **Mathematical equivalence is not enough.**
   Two representations can be mathematically equivalent yet incompatible as teaching tools. Preserve established orientation, ordering, assignment to the underlying spaces or objects, and conventions unless there is a physical or mathematical reason to change them. Announce and justify any necessary change explicitly.
3. **Give a physical structure a stable name wherever possible.**
   Stylistic synonyms are no improvement if they blur the ontology. Introduce new terms only when a genuinely new physical role becomes visible.
4. **Abstractions should carry mental load.**
   Before shortening anything, ask:

   > **Which relationship will the reader have to reconstruct from memory if this paragraph, term, or picture disappears?**

   If the answer is essential, shorten it only if a better abstraction takes over the same load.
5. **Do not interchange cause and representation.**
   A later compact formula, generator, auxiliary field, metric, or operator must not retrospectively be written as though it were the original physical cause. The narrative remains:

$$\text{physical process} \rightarrow \text{visible effect} \rightarrow \text{appropriate representation} \rightarrow \text{mathematics}.$$

6. **New representations do not replace physics that is already understood.**
   When information is represented differently in a later phase, its origin and the earlier relationship it carries forward must remain recognizable. A new mathematical carrier is not automatically a new physical degree of freedom.
7. **Compare mature earlier versions against the new version.**
   For major revisions, it must be internally clear what has been
   - preserved,
   - moved,
   - renamed,
   - made more precise,
   - replaced,
   - or deliberately removed.

An established abstraction that has silently disappeared is initially a warning sign.

8. **Keep the whole picture visible.**
   Even short orienting sentences can be essential when they tell the reader which underlying space or object, phase, or representation the following calculation belongs to. Such sentences are not mere repetition if they prevent different levels from being mixed up.

The goal is not maximum textual continuity.

The goal is **continuity of understanding**.

> **A good revision may change the mathematics, switch representations, and shorten the text. But it must not silently take away orientation the reader has already gained.**

Part 8:

Please do not use `\boxed` in your answers or in future Markdown files when the content is primarily text. `\boxed` does not wrap lines automatically. For pure formulas, `\boxed` is fine. For statements consisting mostly of text, use `> ** ... **` instead.

Every Markdown file belonging to the final theory must begin with:

This theory was developed by physicist Roland Bollmann (driving intuitive force and primary conceptual development, bollmann@iPhys.de), with Gemini as a brainstorming partner and ChatGPT assisting with mathematical precision and editorial development.