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Definition of GP : Coordinate-System, Equation, and Solution
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From: 😎 SourceCodeOf_HumanGenome (Original Message)   Sent: 4/10/2006 11:56 PM

All the contents of physics consist of a coordinate-system,
some equations, and their solutions.

A coordinate-system is a mapping of a mathematical set
onto the set of all the physical histories.

The physical law is described mainly by some mathematical
equations.

Only the history, onto which the coordinate-system maps
a solution of the equations, is possible.

Grammatical physics mainly concerns coordinate-systems.
It means that grammatical physics is not very concerned with
equations and their solutions.

This is to say, the grammatical way to construct a new
physical theory, depends mainly on a good selection of
an appropriate coordinate-sysytem.

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From: 😎 SourceCodeOf_HumanGenome   Sent: 7/15/2008 4:10 PM

To explain the notion of coordinate-system, I cite my old sentences below.

I use the word 'coordinate system' in a little broader meaning
than the ordinary meaning.
The coordinate system which I say
is a general mapping
which maps a mathematical notion to a physical notion.
Specifically, as the coordinate system of a physical theory,
I think of a mapping which maps a mathematical notion
to a history of the physical system.

For example, a physical unit is a coordinate system in my broad meaning.
It is because the unit of length cm
              can be thought of
                      as the mapping
                           which maps each real number x to a length x
centimeters
              and the unit of time s
                  can be thought of
                          as the mapping
                                which maps each real number t
                                       to the time t seconds.

By using the units cm and s,
I define the Cartesian coordinate system D and the time coordinate system
'clock'.
D is the mapping
      which maps each real row vector (x,y,z)
              to a spatial point whose Cartesian coordinate is (x,y,z),
and 'clock'
      is the mapping
          which maps each real number t
                  to the time later by t seconds than the arbitrarily given
original time.
Therefore, Both D and clock are coordinate systems in my broad meaning.

As the coordinate systems of the physical theories,
I can mention the coordinate system of the classical mechanics for a
particle
                      and the coordinate system of the quantum mechanics for it.

The coordinate system Mc of the classical mechanics for a particle
is defined as the mapping which maps each function χ from R to R^3
                              to a history Mc(χ) of the position of the
particle
where Mc(χ) is the following proposition.
"For any real number t, the position of the particle is D(χ(t)) at the time
clock(t)."

The coordinate system Mq of the quantum mechanics for a particle
is the mapping which maps each function Ψ from R^4 to C
                      to a history Mq(Ψ) of the quantum state of the particle
where Mq(Ψ) is the following proposition.
"For any real number t,
  the quantum state of the particle is state(Ψ(□,t)) at the time clock(t)."
Please notice that in this statement
                  Ψ(□,t) is a mapping of R^3 to C
                      and is defined by the equation [Ψ(□,t)](x,y,z)=Ψ
(x,y,z,t)
                      and 'state' is a mapping which maps each function from
R^3 to C
                                      to a quantum state
                          and is a coordinate system in my broad
meaning.

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From: 😎 SourceCodeOf_HumanGenome	Sent: 7/15/2008 4:27 PM

As jargons, I propose three words grammar, theory, story.
'Grammar' means coordinate-systems.
'Theory' means equations representing physical laws.
'Story' means solutions representing history of the world.

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From: 😎 SourceCodeOf_HumanGenome   Sent: 7/15/2008 4:40 PM

Grammatical physics mainly concerns coordinate-systems.
Theoretical physics mainly concerns equations.

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From: 😎 SourceCodeOf_HumanGenome   Sent: 7/18/2008 6:31 PM

A physical unit is a coordinate-system in my meaning,
because it maps a mathematical notion onto a physical notion.

For example, the unit of length cm maps a positive real number
onto a length, and so it is a coordinate-system.
A positive real number is a mathematical notion
and a length is a physical notion.

The number onto which a function f maps a number x is written as f(x).
Imitating this notation, let us represent x centimeters by cm(x).

Similarly, x seconds can be written as s(x),
and x kilograms can be written as kg(x), etc.

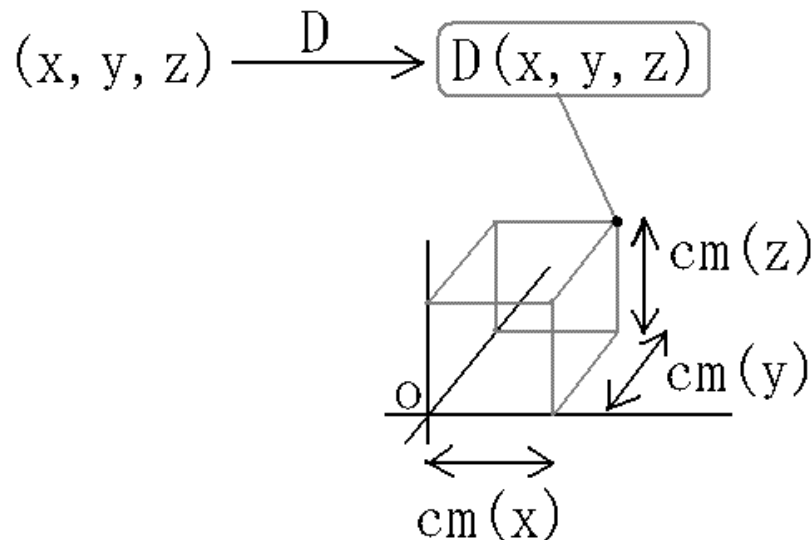**Reply**   💛 **Recommend**   Message 6 of 6 in Discussion

From: 😎 SourceCodeOf_HumanGenome   Sent: 7/18/2008 7:10 PM

A cartesian coordinate-system D is defined as a mapping which maps a row vector
onto a position as shown in the following figure.

A row vector is a mathematical notion and a position is a physical notion,
so D is a coordinate-system in my meaning.

Note that the coordinate-system cm works as a part
of the coordinate-system D.

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