International
Journal of
Scientific and Statistical
Computing (IJSSC)

INTERNATIONAL JOURNAL OF SCIENTIFIC AND STATISTICAL COMPUTING (IJSSC)

VOLUME 5, ISSUE 2, 2014

EDITED BY
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INTERNATIONAL JOURNAL OF SCIENTIFIC AND STATISTICAL COMPUTING (IJSSC)

CSC Publishers, 2014

EDITORIAL PREFACE

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Traditional Nature Sciences Are Unoptimizable Methodologies to Explore Whole Universe

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Abstract

In allusion to problem of coming true the human's final objective of scientific exploratory researches, this paper presented a new concept: the optimal methodology for human to explore whole universe. Based on the scientific computing of substance running process in whole universe system, as well as historically statistical summary of traditional natural science researches, this paper discovered that the traditional nature sciences are unoptimizable methodologies to explore whole universe, because nature sciences can just research on external phenomena which can be envisioned or guessed or measured by all possible means and equipments of sciences and technologies, although these nature sciences are just partially optimal methodologies to specially explore the substance phenomena in the existent and developing environments of human.

Keywords: Whole Universe System, Optimal Exploration Methodology, Scientific Computing, Historically Statistical Analysis, Inverse Design of Universe System, Inexhaustible Explorations and Limited Explorations.

1. INTRODUCTION

A large-scale scientific computing creates an immense multidimensional digital world which can describe a multidimensional real physical world[1], although currently this multidimensional digital world cannot be entirely apprehended by human[2]. An immense system-cloud-parallel scientific computing can describe the running processes of some universe substances, and human's exploration process about universe substances for human's final purpose of scientific nature researches.

The final purpose of scientific nature researches is to search out the groundwork of substance system in the whole universe, which includes substance structures in the whole multidimensional astrospace, their running processes and the characteristics, as well as inner parameters of multidimensional space and substances, $\cdots\cdots$; and then human can occupy, control and discretionarily utilize the whole universe multidimensional space and all kinds of universal substances. To come true the final scientific exploration purpose, human ancestors and human have ceaselessly explored and researched on the unknown natural phenomena around themselves of the day, from the time when the ancestor appeared as well as existed up and evolved to the present. Scientific exploration researches not only the scientific activities in laboratories by scientists, but also include all activities for exploring unknown phenomena in anyplace in anytime by any ways ..... . The research profundity and scope gradually and ceaselessly expand, the great researchful achievements are countless, which are mainly incarnated as: Human ancestors and human came through incomputable survive or perish circumstances on the Earth which is the natal cunabula of human, and now human are gradually going to occupy and control the Earth. However, there endlessly are (and will be) inexhaustible abstruse and unknown phenomena to be explored and researched by human because human

are trying to come true the final purpose of scientific nature researches. So there are the following problems:

Are traditional nature sciences (such as references [3]~[5]) the optimal methodologies for human to scientifically explore and research on the groundwork of substance system in the whole universe?

Is there an optimal method of scientific explorations and researches for human to achieve the final purpose as soon as possible and paying out the minimum expenses? What is the optimal methodology of explorations and researches?

If human continuously use the traditional methodologies which are used from of old, can human achieve the final purpose of scientific nature researches? and when the final purpose of the researches can be achieved?

According to the scientific computing of universe substances' running processes, based on the general running essential principles of all universal substances, as well as the universal numerical algorithm for the whole universe substances[1][2], considering the final purpose of scientific explorations and researches on substances in our human subconsciousness, this paper systematically and roundly analyzed the characteristics of the traditional nature sciences, and discovered that the traditional nature sciences are unoptimizable methodologies to search out the groundwork of substance system in the whole universe.

2. PROBLEM FORMULATION ON OPTIMAL EXPLORATION ON THE WHOLE UNIVERSE

To explore the groundwork of substance system in the whole universe, modern human should search out an optimal and feasible exploration methodology $\vec{U}^*(t)$, under the conditions of multi-Dimensional living environments and scientific repertories of human. By using the optimal and feasible exploration methodology $\vec{U}^*(t)$, the ratio $\vec{\Upsilon}$ of scientific exploring result and expenses is maximized:

$$\max_{\vec{U}} \vec{\Upsilon}(\vec{\aleph}, \vec{C}_{ST}, \vec{U}) = \max_{\vec{U}^*(t)} \frac{\overset{[\Delta t \Delta x \Delta y \Delta z \cdots \cdots]}{\underset{|\leftarrow----N_S \ Variables----\rightarrow|}{}}}{\left\| \vec{C}_{ST} \right\|} \tag{1}$$

where, $\vec{\aleph}$ --- scientific exploring results; $\vec{C}_{ST}$ --- expenses for scientific researches which include the time being consumed away, the loss of multi-Dimensional living space and so on; $\vec{U}$ --- scientific exploration methodology; Δt, Δx, Δy, Δz are respectively time, 3- Dimensional geometrical space, N_S is the dimension of the space ($N_S > 4$), which means that human can completely control and freely use all substances in the maximum N_S-Dimensional universe space.

Synchronously, the following constrain conditions should be satisfied: multi- Dimensional living environments of human

$$\underset{|\leftarrow----N_S \ Variables----\rightarrow|}{\Delta t \Delta x \Delta y \Delta z \cdots \cdots} > S_{Min} \tag{2}$$

where, S_{Min} is the necessary multi- Dimensional living universe space of human. That is, human must possess of enough large N_S-Dimensional living space which means that: existent time Δt of human can be very very … very long (hopefully forever $\Delta t \to \infty$), existent geometrical space $\Delta x \Delta y \Delta z$ can continuously increase (at least doesn't decrease to a limit value), so as to human

not only can keep existent state, but also continuously carry through scientific researches, develop and evolve human selves.

The output $\vec{\aleph}$ should be the groundwork of substance system when the some substance phenomena of the computing simulation are very close to the known knowledge database of human beings. That is,

$$\vec{\aleph} = \mathbf{O} \, , \qquad \text{if } \left\| \odot_{\circ}^{(k)} - \oplus \right\| < e_{Min} \qquad (3)$$

where, $\mathbf{O}$ is the groundwork of substance system in the whole universe, which is the final object for human to explore; $\odot_{\circ}^{(k)}$ is the substance phenomena which are created by the kth iterative numerical system simulation for searching out the groundwork of substance system in the whole universe; $\oplus$ is the knowledge database of human beings, which is digitally presented; e_{Min} is the receivable error of the systemic numerical simulation on the whole universe system.
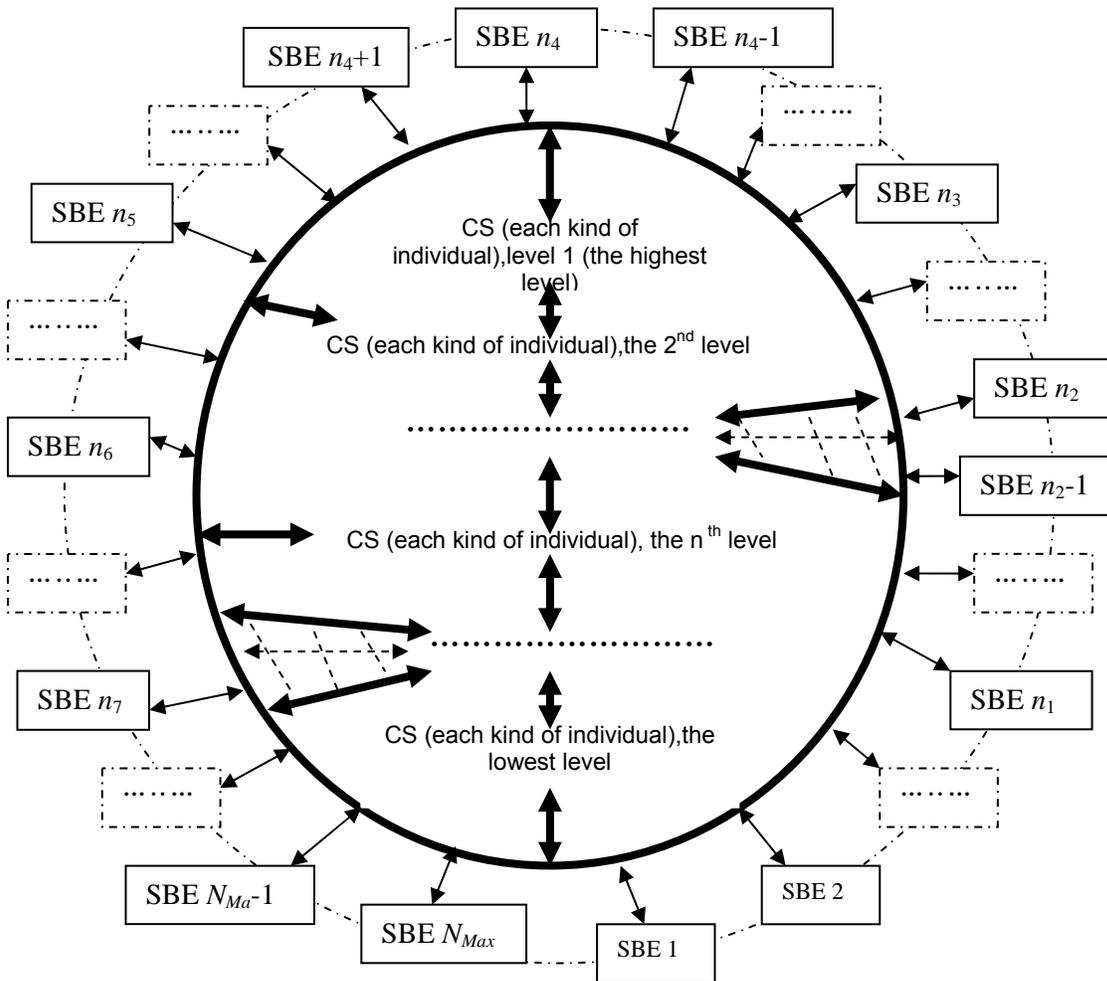

FIGURE 1: Multi-kinds of universe substance basic elements (SBE) engender multi-kinds of combined substances (CS). The universe substance units and a great deal of hiberarchy levels and kinds of combined substances are transforming each other for pursuing their benefit indexes[1].
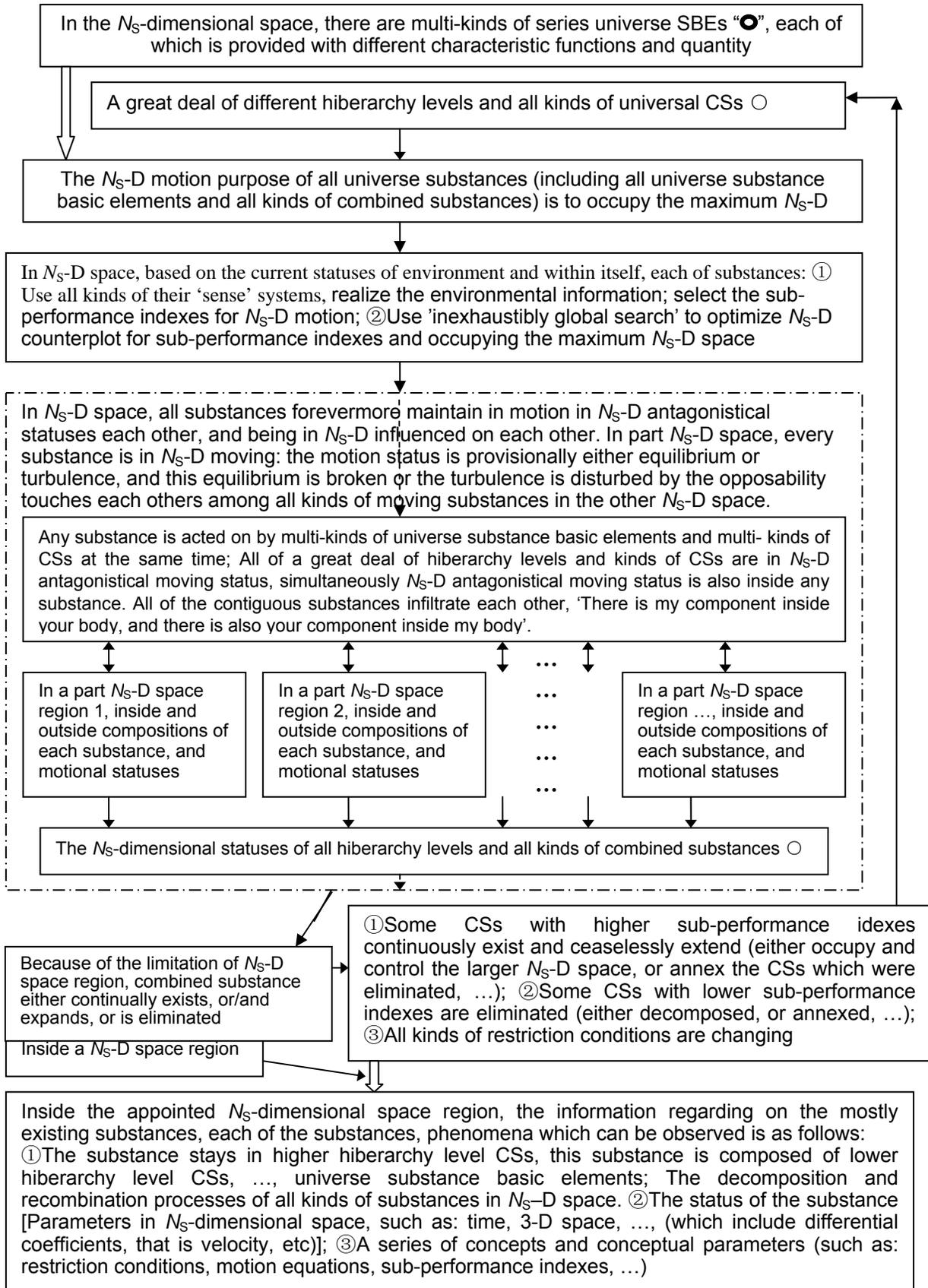
In the N_S-dimensional space, there are multi-kinds of series universe SBEs "⬤", each of which is provided with different characteristic functions and quantity

A great deal of different hiberarchy levels and all kinds of universal CSs ◯

The N_S-D motion purpose of all universe substances (including all universe substance basic elements and all kinds of combined substances) is to occupy the maximum N_S-D

In N_S-D space, based on the current statuses of environment and within itself, each of substances: ① Use all kinds of their 'sense' systems, realize the environmental information; select the sub-performance indexes for N_S-D motion; ②Use 'inexhaustibly global search' to optimize N_S-D counterplot for sub-performance indexes and occupying the maximum N_S-D space

In N_S-D space, all substances forevermore maintain in motion in N_S-D antagonistical statuses each other, and being in N_S-D influenced on each other. In part N_S-D space, every substance is in N_S-D moving: the motion status is provisionally either equilibrium or turbulence, and this equilibrium is broken or the turbulence is disturbed by the opposability touches each others among all kinds of moving substances in the other N_S-D space.

Any substance is acted on by multi-kinds of universe substance basic elements and multi-kinds of CSs at the same time; All of a great deal of hiberarchy levels and kinds of CSs are in N_S-D antagonistical moving status, simultaneously N_S-D antagonistical moving status is also inside any substance. All of the contiguous substances infiltrate each other, 'There is my component inside your body, and there is also your component inside my body'.

| In a part N_S-D space region 1, inside and outside compositions of each substance, and motional statuses | In a part N_S-D space region 2, inside and outside compositions of each substance, and motional statuses | ... ... | In a part N_S-D space region ..., inside and outside compositions of each substance, and motional statuses |

The N_S-dimensional statuses of all hiberarchy levels and all kinds of combined substances ◯

Because of the limitation of N_S-D space region, combined substance either continually exists, or/and expands, or is eliminated

Inside a N_S-D space region

①Some CSs with higher sub-performance idexes continuously exist and ceaselessly extend (either occupy and control the larger N_S-D space, or annex the CSs which were eliminated, …); ②Some CSs with lower sub-performance indexes are eliminated (either decomposed, or annexed, …); ③All kinds of restriction conditions are changing

Inside the appointed N_S-dimensional space region, the information regarding on the mostly existing substances, each of the substances, phenomena which can be observed is as follows: ①The substance stays in higher hiberarchy level CSs, this substance is composed of lower hiberarchy level CSs, …, universe substance basic elements; The decomposition and recombination processes of all kinds of substances in N_S–D space. ②The status of the substance [Parameters in N_S-dimensional space, such as: time, 3-D space, …, (which include differential coefficients, that is velocity, etc)]; ③A series of concepts and conceptual parameters (such as: restriction conditions, motion equations, sub-performance indexes, …)

FIGURE 2: The N_S-Dimensional running process of universe[2] substances.

3. THE MODEL AND COMPUTING PROCESS OF THE WHOLE UNIVERSE SUBSTANCES

3.1 The Structure and Running Process of the Whole Universe Substance

The astrospace S is a N_S -Dimensional space. The size of this space is $A_1 \times A_2 \times A_1 \times \cdots \times A_{N_S}$, where A_i (i=1,2, $\cdots$, N_S) is the size of the ith-D space (A_1 is time, A_2, A_3, A_4, are 3-D geometry physics space, $\cdots \cdots$). The universe is made up of a series of (total N_{Max} kinds) substance basic elements (SBE) '⬤' and combined substances (CS). The SBEs are the rock-bottom basic elements in the whole universe, CSs are transformed from the SBEs and lower level CSs. Those SBEs and all levels of CSs (including all kinds of CSs) are ceaselessly running, and ceaselessly transforming each others. These ceaseless running and transforming each others are presented as Figure 1.

The N_S -Dimensional moving processes are presented as Figure 2 for all levels and all kinds of CSs, based on the general running essential principles of universal substances and the general numerical algorithm of substance running processes. That is, the processes of N_S-D antagonistic running of substance in the whole universe, and the substance structures created from the N_S-D antagonistic running keep to the general running essential principles of universal substances. The detailed results of substance running processes in the whole universe can be computed by the mathematical model of substance running process.

3.2 The Mathematical Model of the Whole Universe Substance

Based on the general principles of universal substances system[2], inside the region $\widetilde{\underset{\sim}{\forall}}_S^N$ in the N_S -D space, the universal numerical algorithm $\vec{M}$ Universal for original running of all universe substances is as follows[1][2]:

$$[A, \Delta, \Pi, \widetilde{\Im}, \widetilde{\aleph}, \vec{g}_{\alpha,\delta,\eta}, \vec{C}_{\bar{X}}, \vec{C}_{\bar{U}}, \vec{C}_j, P, \vec{U}(t), \vec{H}, \widetilde{\Theta}; N_{\forall,Max}, N_{\forall,k,Max}, A_\forall, \Delta_\forall, \Pi_\forall, \widetilde{\Im}_\forall, \widetilde{\aleph}_\forall, P_\forall, \vec{\chi}_{\forall, \alpha, \delta, \eta},$$

$$\cdots] = \vec{M}_{Universal}(N_S, A_1, A_2, A_3, A_4, \cdots, A_{N_S}, N_{Max}, N_{k,Max}, \Diamond, \Sigma_A, \vec{w}_{k,i}, \vec{C}_{\bar{W}}, \vec{f}_{k,i}, \vec{u}, \vec{J}; \widetilde{\underset{\sim}{\forall}}_S^N, \cdots) \qquad (4)$$

where, the functions of the universal numerical algorithm $\vec{M}$ Universal of all universe substances are as following: input the total number and size of space dimension, parameters of the SBE units which permeate in the whole universal N_S-D space, as well as the determined universal subspace, and so on; after the $\vec{M}$ Universal running which means the N_S-D opposition motions of the all SBE units and all kinds and all levels of the CSs, output the following information: There are inexhaustible (huge amount) phenomena which are boundlessly abstruse, may be any grotesque circs, …, in the whole universal N_S-D space.

Regarding on the universal numerical algorithm $\vec{M}$ Universal for original N_S –Dimensional running of all universe substances, the concretely and detailedly mathematic description, mathematic expression of numerical simulation, the overall computational process, the computational flow chart of numerical simulation and so on can be referred to Ref. [1].

The concrete inputs are as follows:

(1) The dimension of astrospace is N_S –Dimension.
(2) The sizes of each dimension for astrospace are respectively as: A_1 is time, A_2, A_3, A_4, are 3-D geometry physics space, …, the space N_S, which made up of a N_S –Dimensional space S.
(3) The information of universe substance basic elements: ①In the whole N_S -D region, there are totally N_{Max} kinds and series of universe substance basic elements, and there are different characteristic and amount for each of the SBEs, for example, there is $N_{k,Max}$ units for the SBE k (k=1,2, $\cdots\cdots$, N_{Max}); ②There are totally $\Diamond$ categories of the SBEs and totaled Σ_A units for

all categories of the SBEs in whole astrospace; ③Inner parameters: the inner parameters of the SBE unit $m_{k,i}$ are $\vec{w}_{k,i}$; ④Restriction conditions: The restriction functions for the inner parameters of each kind of the SBEs are $\vec{C}_{\vec{W}}$; ⑤The functional motion equation $\vec{f}_{k,i}$ for all kinds of the SBE units, where, k is the SBE k, $k = 1, 2, \ldots, B_{\text{Max}}$, i is the SBE unit i; ⑥The control variables $\vec{u}$ for the SBE unit; ⑦The performance index $\vec{J}$ of the SBE unit is to pursue predominating the maximum N_S–D space and all of substances in this space.

(4) Determine a N_S–Dimensional universal subspace region $\tilde{\underset{\sim}{\mathbb{V}}}{}^N_S$.

The concrete outputs are as follows (In the whole N_S–Dimensional astrospace):

(1) The macro information of all substances: ①The total level number of all combined substances A. ②The total kind number of all levels of combined substances Δ. ③The total number of all kinds and levels of combined substances Π.

(2) The detailed information of all kinds of substances (including the SBE units and combined substances): ①The statuses $\vec{\Im}(t)$ of all kinds of the SBE units, the statuses $\vec{\aleph}(t)$ of all kinds and levels of combined substances. These statuses include the parameters in the N_S–D space, such as: time, 3-dimensional geometry space, …, the derivatives among the above parameters, such as velocity and so on. ②The motion equations of combined substance, $\vec{g}_{\alpha,\delta,\eta}$, the level number ($\alpha$) of combined substances, the δ (th) category, the η (th) combined substance. ③A serial of concepts and conceptual parameters are educed for the substances, 【such as: restriction conditions which include restriction functions $\vec{C}_{\vec{X}}$ for the status variables of the SBE units and combined substances, restriction functions $\vec{C}_{\vec{U}}$ for control strategies, restriction functions $\vec{C}_{\vec{J}}$ for performance indexes, motion equations, sub-performance indexes, …】. ④The performance indexes $P = \begin{bmatrix} \vec{J} & \vec{\beta} \end{bmatrix}^T$ for all kinds of the SBE units and all possible levels and kinds of combined substances, such as N_S-D space occupied by the substance; the substance shapes vary with N_S-D space, which can be observed by human in the different conditions, the observed results of these shapes are different because of the different observation conditions, and so on. ⑤Control variables $\vec{U}(t)$ for all kinds of the SBE units and combined substances. ⑥$\vec{H}$ are the characteristic equations engendered by the interactions among substances, $\tilde{\Theta}(t)$ are the characteristic phenomena created by the interactions among all possible levels and kinds of combined substances around this substance (such as the SBE unit $m_{k,i}$) in the N_S-D space region $\tilde{\underset{\sim}{\mathbb{V}}}{}^N_S$ where the substance stays. These phenomena of multifarious characteristics for the substance are as follows: all kinds of interplay forces 【such as universal gravitation, force in magnetic field, force caused by electricity, etc】, substance shapes, …. ⑦Each combined substance is inside some combined substances of higher levels, and this combined substance is made up of combined substances of lower levels and the SBE units. ⑧The decompositions and recombination of all substances in the N_S–D motion processes. ⑨All hiberarchy levels and kinds of combined substances respectively optimize the performance indexes $\vec{\beta}$ by each strategies $\vec{\mu}(t)$.

(3) In the determined N_S-D space region $\tilde{\underset{\sim}{\mathbb{V}}}{}^N_S$, the existing substances and the phenomena

information which can be observed are as following: ①There are totally $N_{\forall,Max}$ kinds and series of universe SBEs, and there are $N_{\forall,k,Max}$ SBE units for each SBE respectively; ②The total level number of all combined substances is $A_{\forall}$, the total kind number for all levels of combined substances is $\Delta_{\forall}$, the total number of all kinds and levels of combined substances is $\Pi_{\forall}$, the statuses of all kinds of the SBE units are $\vec{\mathfrak{I}}_{\forall}(t)$, the statuses of all kinds and levels of combined substances are $\vec{\aleph}_{\forall}(t)$, and so on.

3.3 The Computing Process of N_S-D Antagonistic Running of Universe Substances

In the computing process of N_S-D antagonistic running of substance structures in the whole universe, the variational process of causality logic for the running processes of a great deal of hiberarchy levels and kinds of combined substances in N_S-Dimensional space are presented as Figure 3 which is created by a huge numerical computing regarding on the motion processes of universal substances started from the SBEs '⬤'. The multitudinous kinds of anterior phenomena are the conditions of a latter phenomenon, and a latter phenomenon is the result which caused by collectively coordinated oppositions of multitudinous kinds of anterior phenomena.

The multidimensional motion processes of universal substances create the inexhaustible, capriccioso, incomparably abstruse phenomena in multidimensional astrospace. These exhaustless phenomena create the inexhaustible 'mathematics- physics –logic relationships' which are composed of anterior phenomena and latter phenomena. The processes regarding on the transformation of these databases along with multidimensional space are shown in Figure 3, where, ⬤ is the units of foremost substance basic elements; ○ is the result of anterior conditions, and the condition of latter results. These conditions and results are the external phenomena which are created by the multidimensional motion processes of universal substances, these substances include all levels and all kinds of universal combined substances and the SBE units, each substance ○ is shown in Figure 3.

4. THE PROCESS OF NUMERICAL COMPUTING ABOUT THE UNIVERSE SUBSTANCE SHOWS THAT TRADITIONAL NATURAL SCIENCES ARE NEITHER OPTIMAL NOR FEASIBLE METHODOLOGIES TO EXPLORE WHOLE UNIVERSE

According to the numerical computing regarding on the motion processes of universal substances (in Figure 3), traditional natural sciences can not search out the SBEs '⬤' for whole universe. Because:

(1) Traditional natural sciences are in the hardheaded and step by step ways starting from the point A in Figure 3 (the multidimensional astrospace of human natal environment), but cannot track out the SBEs '⬤'.

Actually, in past several hundred million years, practical actions of traditional natural sciences are trying to track out the SBEs '⬤' in Figure 3. The explorations started from the most essential existent requirements of human ancestors, that is, started from the explored point A → reached exploration level B, because of ceaselessly in-depth explorations and evolvement accumulation → exploration level C: ceaselessly in-depth explorations and evolvement accumulation → exploration level D: ceaselessly in-depth explorations and evolvement accumulation → exploration level E: ceaselessly in-depth explorations and evolvement accumulation → ··· → exploration level F: a part of the foremost the SBE units have been touched and discovered →
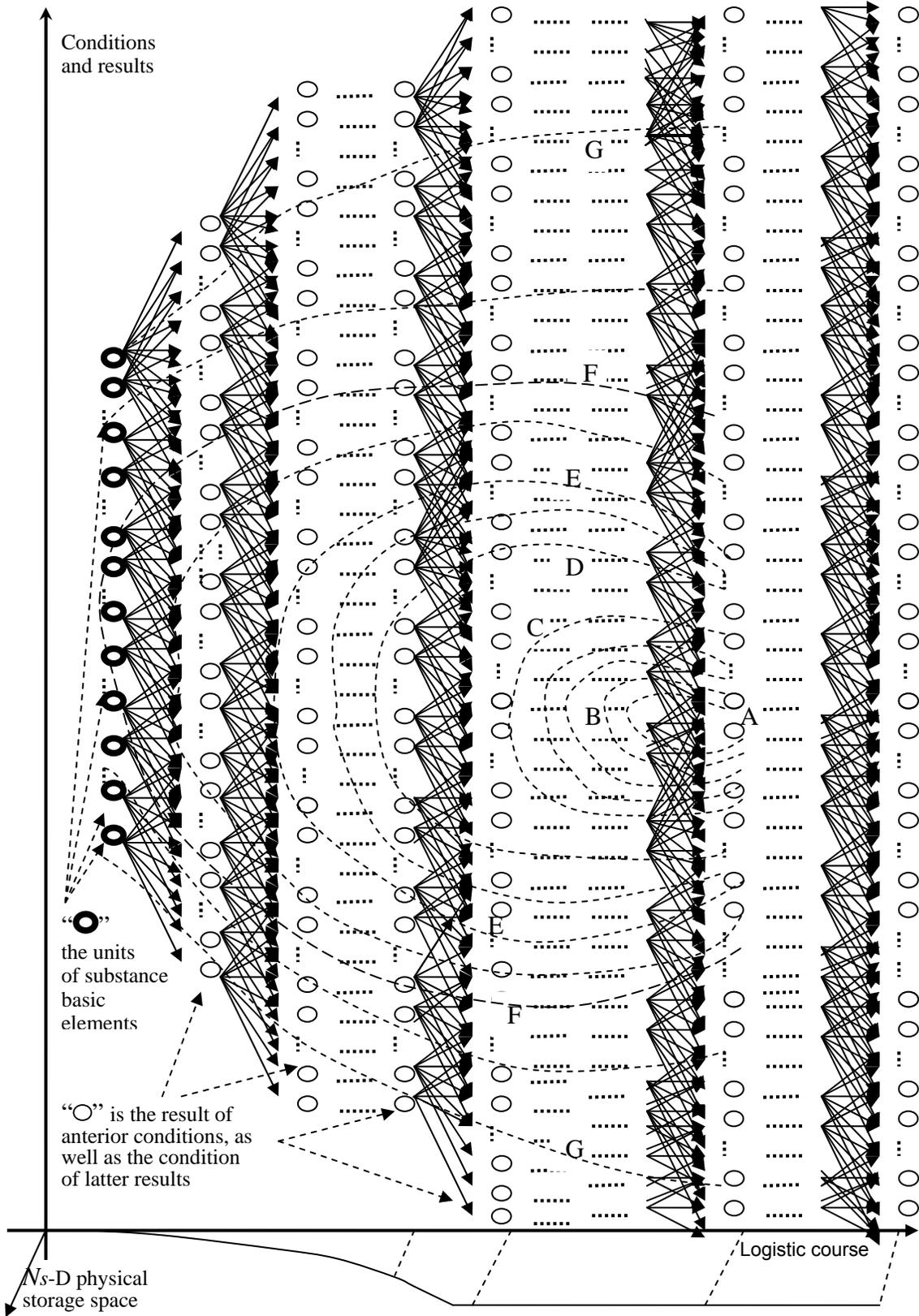
FIGURE 3: Variational process of causality logic for the running process of a great deal of hiberarchy levels and kinds of combined substances in N_S-D space, the relationship between the anterior phenomena (conditions) and the latter phenomena (results) in the logic[1].

$\cdots \rightarrow$ exploration level G: finally discover all of the foremost the SBE units. Before the exploration level F, the explored scope is larger and larger, and the knowledge base becomes more and more; After the exploration level F, the explored scope is smaller and smaller.

(2) Traditional natural sciences cannot set up a converse function which can extrapolate the SBEs '⊙' based on the external phenomena in the astrospace of human natal environment.

According the viewpoint of numerical mathematization computing, if the calculation starts from the explored point A which is the universal subspace region $\underset{\approx}{\tilde{\forall}}{}^{N}_{S}$ for human living, and then try to search out the target points SBEs '⊙', a converse function $\vec{M}^{-1}_{Universal,\underset{\approx}{\tilde{\forall}}{}^{N}_{S}}$

$$(N_S, A_1, A_2, A_3, A_4, \cdots, A_{N_S}, N_{Max}, N_{k,Max}, \Diamond, \Sigma_A, \vec{w}_{k,i}, \vec{C}_{\vec{W}}, \vec{f}_{k,i}, \vec{u}, \vec{J}) = \vec{M}^{-1}_{Universal,\underset{\approx}{\tilde{\forall}}{}^{N}_{S}}[N_{\forall,Max}, N_{\forall,k,Max}, A_\forall,$$

$$\Delta_\forall, \Pi_\forall, \vec{\mathfrak{I}}_\forall, \vec{\aleph}_\forall, P_\forall, \vec{\chi}_{\forall,\alpha,\delta,\eta}, \cdots] \tag{5}$$

has to be set up. The inputs of the converse function $\vec{M}^{-1}_{Universal,\underset{\approx}{\tilde{\forall}}{}^{N}_{S}}$ are the existing substances and the phenomena information which include the huge knowledge base exploringly obtained by human in the space region $\underset{\approx}{\tilde{\forall}}{}^{N}_{S}$; the outputs of the converse function $\vec{M}^{-1}_{Universal,\underset{\approx}{\tilde{\forall}}{}^{N}_{S}}$ are the SBEs '⊙'. That is, the converse function $\vec{M}^{-1}_{Universal,\underset{\approx}{\tilde{\forall}}{}^{N}_{S}}$ is expected to numerically work out the SBEs '⊙' if some external phenomena in the subspace region $\underset{\approx}{\tilde{\forall}}{}^{N}_{S}$ inside whole universe are as the inputs. But it is absolutely that there is no such converse function $\vec{M}^{-1}_{Universal,\underset{\approx}{\tilde{\forall}}{}^{N}_{S}}$, because the real universe start from the SBEs '⊙' and the SBEs produce inexhaustible, mysterious and supernatural phenomena, which are actually created from inexhaustible antagonistic motions among all levels of and all kinds of substances; these inexhaustible phenomena are depended upon the existent entironments and the corresponding countermeasures of all substances (including human selves) in the subspace region $\underset{\approx}{\tilde{\forall}}{}^{N}_{S}$. It is absolute that the SBEs '⊙' can control any phenomena in the whole universe, but any phenomena connot conversely control the SBEs '⊙' which are the foremost substance basic elements in the whole universe. In the past several hundred million years, human ancestors and human are trying to set up the function $\vec{M}^{-1}_{Universal,\underset{\approx}{\tilde{\forall}}{}^{N}_{S}}$ whose format is a huge knowledge base. However, the huge knowledge base is just valid under the definite conditions of multidimensional environments, and maybe be invalid if the multidimensional environments are contravened. For examples, in Figure 3, the huge knowledge base at point A is just valid at point A and maybe be invalid outside region A; the huge knowledge base inside exploration level B is just valid inside exploration level B and maybe be invalid outside exploration level B; ……. That is, all traditional natural science achievements are just experiential formulae. Therefore, the function $\vec{M}^{-1}_{Universal,\underset{\approx}{\tilde{\forall}}{}^{N}_{S}}$ is invalid for human to go from the explored point A to the SBEs '⊙'.

The traditional natural sciences are trying to forever and more ceaseless explore and research for obtaining new inexhaustible discoveries considering observability phenomena and unsolved brainteasers; but if human obtained more new discovers, there are much more unsolved brainteasers for human to scientifically explore. In Figure 3, the scientific exploration level of nowaday human is probably at the level between D and E, which is in quickly developing phases. If human are going to continually apply the traditional scientific exploration methodology "inexhaustibly explore 'the external phenomena created by the motions of universal substances'"

at all times, human have to pass through a very faraway road to implement the human primary objective of scientific explorations and researches.

(3) There are two ways for human to find out the most original fundus of universe substances, the SBEs and their properties.

① Scientific computing for the SBEs starting from the point A: To forever and more ceaseless explore and research for obtaining new inexhaustible discoveries considering observability phenomena and unsolved brainteasers. According to the above analysis about searching out the units of foremost SBEs '⊙' by using scientific computing, traditional natural sciences are trying to calculate the SBEs '⊙' based on the external phenomena at point A (in Figure 3) and more statistical information around the point A (such as multidimensional astrospace B, C and D). **Traditional natural sciences are not only unoptimizable methodologies to explore the SBEs, but also natural sciences are not suitable for finding out the SBEs from point A.**

②Scientific computing for the SBEs directly starting from the SBEs '⊙' selves: **Although human don't know the real SBEs, why don't human directly guess all possible and all impossible solutions regarding on the SBEs '⊙', just by a huge-cloud- parallel numerical computing ??? !!!** This is a global integrative inverse design of universe substance by a huge-cloud-parallel numerical computing. The SBEs and the their inner parameters, motion equations and the other properties can be directly explored, by using a great deal of cloud and parallel numerical calculation, based on the universe substance basic elements, the general numerical algorithm of substance running process and the general essential principles of substance running process, as well as the tremendous knowledge base which are presented as the form of scientific principles. Finally, the substance phenomena which cannot be imagined or guessed by human are tested and checked by the real physical experiments.

Therefore, even if traditional natural sciences (such as references [3]~[5]) have to pay incomparably immense expenses for scientifically research on the SBEs, these expenses include consuming away overlong time, losing tremendous multi-Dimensional living space and so on, natural sciences still cannot be suitable for finding out the SBEs by the traditional methodologies (computing from point A → level B → level C → …); and then natural sciences have to reform scientific methodologies as a global integrative inverse design of universe substance by a huge-cloud-parallel numerical computing (computing from the SBEs '⊙' → level G → level F → … → level B → point A).

5. THE STATISTICAL INFORMATION ON NATURAL SCIENCES SHOWS THAT TRADITIONAL NATURAL SCIENCES ARE NEITHER OPTIMAL NOR FEASIBLE METHODOLOGIES TO EXPLORE WHOLE UNIVERSE

To endlessly explore and then obtain inexhaustible new momentous breakthrough discoveries, is the traditional natural sciences which are applied since human ancestors up to the present. Natural sciences are statistically summarized according to exploring process of natural sciences, multitudinous methodologies of explorations and researches, the ceaselessly increased achievements and so on, these statistically detailed information and the strongpoints of natural sciences can be checked in Ref.[2]. The shortcomings of natural sciences are briefly and statistically summarized as follows:

(1) Traditional natural sciences can just explore and research on the external phenomena of universal substances.

To implement primary objective, at all times human ancestors and human everlastingly explore and research on 'the external phenomena of universal substances and their running'; The unknown phenomena is just explored and researched on, if the phenomena can be apperceived, or measured or envisioned by all possible means and equipments of sciences and technologies; Synchronously, anything cannot be explored and researched on, if the phenomena cannot be apperceived, nor measured, nor envisioned by all possible means and equipments of sciences and technologies.

This huge knowledge base is just experiential formulae which is valid under the conditions of multidimensional environments where the built base is explored and researched, however, this huge knowledge base maybe be negated and improved if the multidimensional environments are contravened. If the scientific knowledges are increasing, and the new 'Why?'s are also increasing, that is, the knowledge base is more larger, there are more and more unsolved brainteasers to be explored. How large exploring scope and cumulated knowledge base human can endure?

(2) Human give center to selves, and think that all substances except human and other animals don't have 'sentience' and 'ideation'.

From General principle IV, it can be known that all levels and all kinds of universal substances respectively apply their peculiar 'sense' systems to observe the circumjacent environments, find out surrounding information and respectively 'think' about the strategies to obtain the maximum N_S -D space, in their multi-Dimensional existent environments.

Because all levels and all kinds of universal substances adequately apply their 'sensorial' and 'observational' systems in the multidimensional space, and respectively apply their 'awfully intellective ideation', the universal world is inexhaustibly complex, unfailingly ingenious and artful, inexhaustibly mysterious, inexhaustibly $\cdots$. However, currently, if all levels and all kinds of universal substances are deemed to have sensorial capabilities and ideation, then human think that 'all kinds of substances (such as plants and abiological bodies) are humanized'.

Currently, the sum of nonhuman 'high intelligent ideation' is consumedly superior to the high intelligent ideation of human. This can be mainly incarnated by the comparisons between nonhuman 'extremely ingenious' designs and the masterly designs by human: Nonhuman 'extremely ingenious' designs create the ingenious phenomena which include boundless abstrusity and any grotesque circs, extreme carefulness, multidimensional and all-around systems, inconceivability and inscrutability for human, $\cdots$. The optimal and masterly designs by human are created by imitating, direct copying, guessing, and all possible applying the results and processes of nonhuman designs, and so on. However, all levels and all kinds of universal substances have respectively and optimally designed their mutually cooperative and motion laws under all possible environmental conditions, human have to comply all laws of the substances.

(3) Human just considered the following factors: all factors which can be apperceived, measured and envisioned by all possible means and equipments of sciences and technologies; Catch hold of primary, lesser and potty factors; Ignore the absolutely neglectable and wondrously jerkwater factors, as well as the one which cannot be suppositional, perceptive and measurable by all possible technological means and equipments.

Regarding on the decisive effects on that system by this factor which can absolutely be ignored, there are at two existent forms of the effects: ①The factor can efficaciously act on the system along with the change of substance environment in multidimensional space, which is going to be

uncannily discovered by the in-depth explorations and researches in numerous subjects; ②After the system passes for a long time, the effects created by these absolutely neglectable factors have accumulated and become qualitative change. After this qualitative change is found, the system has to pay huge cost to recuperate itself, or it can not be recuperated.

Therefore, from the systemic analysis regarding on the historically statistical information of traditional natural sciences, it is distinctly shown that traditional natural sciences have to pay incomparably immense expenses for scientific researches, because human have to consume away overlong time, also have to lose tremendous multi-Dimensional living space and so on. Therefore, traditional natural sciences are neither optimal nor feasible methodologies to explore whole universe.

6. CONCLUSIONS

Firstly, in allusion to the problem about exploring the groundwork of substance system in the whole universe, this paper presented a new concept: the optimal methodology for human to explore whole universe. The performance indexes of the optimal methodology are expenses for scientific researches which include the time being consumed away, the loss of multi-Dimensional living space and so on.

Afterwards, according to the viewpoints of both scientific computing and historically statistical methodology summaries regarding on human scientific exploratory researches on whole universe system, based on the general running essential principles of universal substances and the general numerical algorithm of substance running processes, the traditional natural sciences are analyzed and the following conclusions are obtained:

The traditional natural sciences are not optimal methodologies to explore whole universe for coming true the human's final objective by paying out the minimum expenses; even if traditional natural sciences pay incomparably immense expenses for scientifically research on the SBEs, natural sciences still cannot be suitable for finding out the SBEs by the traditional methodologies, because the traditional natural sciences just research on the external phenomena of substances and don't directly research on the essential groundwork of substance system and potentially obtain inefficient research achievements. The optimal exploration methodology on whole universe system are the systematically inverse design of universe substance based on immense system- cloud-parallel numerical computing as well as the general running essential principles of universal substances and the general numerical algorithm of substance running processes.

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i. Paper Submission: November 30, 2014   **ii. Author Notification:** December 31, 2014

iii. Issue Publication: January 2015

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