Role of messages in defining group behavior of particles

Ajmal Beg (mail@abctsau.org)
http://www.abctsau.org

Abstract

Particles cannot behave as a group unless there exists a mean to exchange information among one another. This paper discusses the possibility of particles using messages to communicate with one another. It also details different methods to experimentally confirm the existence of messages.

1. Introduction

Particles show group behavior. No group behavior by multiple particles is feasible unless there exists a mean particles could communicate with one another. If nature around us is observed, animals communicate with one another. Similarly the plants also communicate with one another. An animal or plant can be regarded as a collection of large number of particles arranged in specific order. Communication between animals or between plants can be regarded as communication among multiple group of particles which are arranged in specific order and confined within a three dimensional space. If communication can happen between groups of particles, it can also happen within the particles which form the each group.

2. Examples of group behavior by particles

This section describes different types of particle's group behavior.

2.1 Magnetic lines extending from the bar

Particle physics says that four identified interactions are realized by the flow of the field particles. Based on this, it can be said that the magnetic field is also formed by the flow of the field particles. Modern science says that the spin of the electron creates a magnetic field in a perpendicular direction of the flow of the field particle. As the bar magnet is the collection of the multiple atoms, as shown in Figure 1, the field particles forms magnetic field by grouping together and then travel in curved path toward the other end of the magnetic bar. This behavior of the field particle is not possible without:

- Field particles sensing one another.
- Field particle communicating with one another.
- Field particles changing their paths.

2.2 Diffraction of particles

Electrons diffract as they pass through a slit as illustrated in Figure 2. The electron diffraction and diffraction of other particles with non-zero mass is regarded as the most important argument advocating the concept of the wave-particle duality. The electron diffraction can be described as a physical effect due to which:

- Electrons organize themselves into specific distribution pattern when they are forced to pass through a slit.

Such behavior can be observed in daily life. For example, pressing the end of water hose makes water spread in horizontal directions with pressure. Electrons can bend their path, in the existence of an electric field. The slit acts as an obstacle to the flow of the electrons in different directions. There can be two reasons according to this work which can realize the electron diffraction.

- The accumulation of the charge around the slit creates organized deposits of charge which acts like the charged plate as shown in Figure 2. Electrons need to adopt a group behavior to form any patterns of the electric field near the slit to deflect the electrons.
- As free path of the electrons is obstructed, the electrons cooperate with one another and tries to go through the slit by organizing their direction of motions.

Above behaviors are only possible, when

- Electrons can sense one another.
- Electrons can communicate with one another.
- Electrons can take a group action.

2.3 Light splitting

Let's assume a light source which emits one photon at a time as shown in Figure 3. Each photon travels in straight line and strikes the splitter. Due to the photon being a quanta, the photon is not expected to split into two parts. Photon goes toward right or left. If the flow of the photons from the source continues, half of the photons go toward right and half of them go toward left. If the splitting is a real random process, the photons should not split into two almost equal groups. One side could have only 10% of the photon, while the other with 90% of the photons. At other occasion, photons could have been split into two groups of 30% or 70%. If each photon which strikes the splitter is observed, it cannot be determined whether it will go toward right or toward left. However, when looked at the total number of photons, it is equally divided into two equal groups. This observation indicates that:

- The group of photons have a group target to split between two groups.
- Each individual photon tries to accomplish the group target.

Such behavior is only possible when:

- Photons can sense each other.
- Photons can communicate with each other.
- Photons can take a group action.

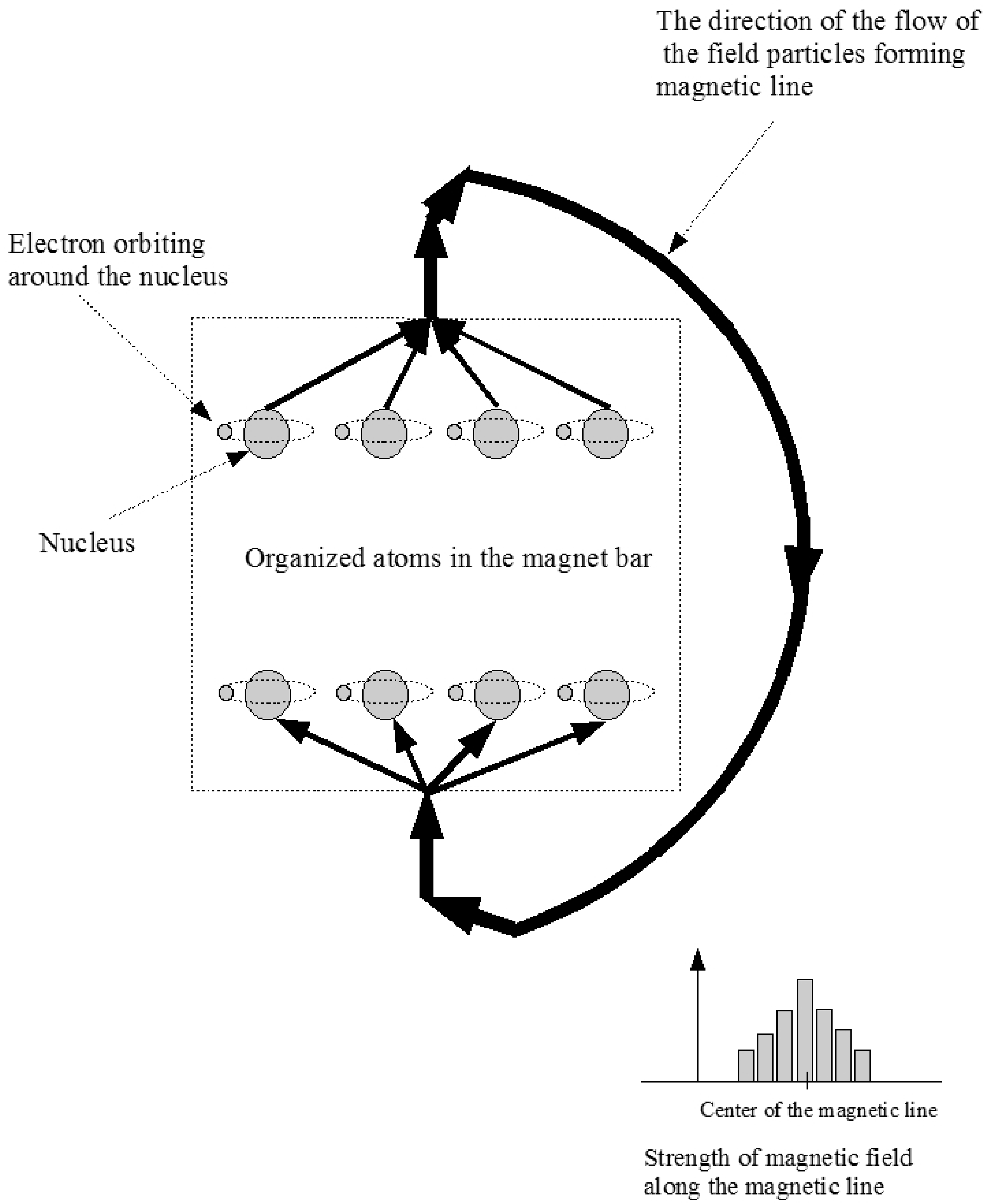


Figure 1: Group behavior of field particles resulting in magnetic lines

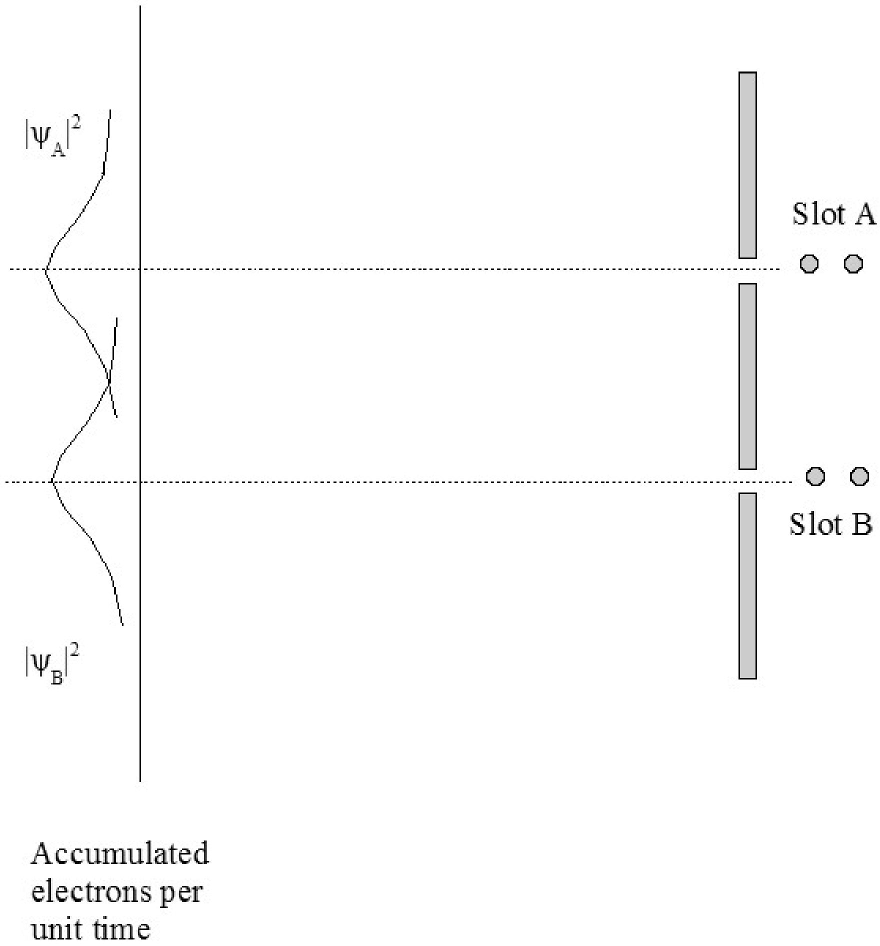


Figure 2: Wave-particle duality

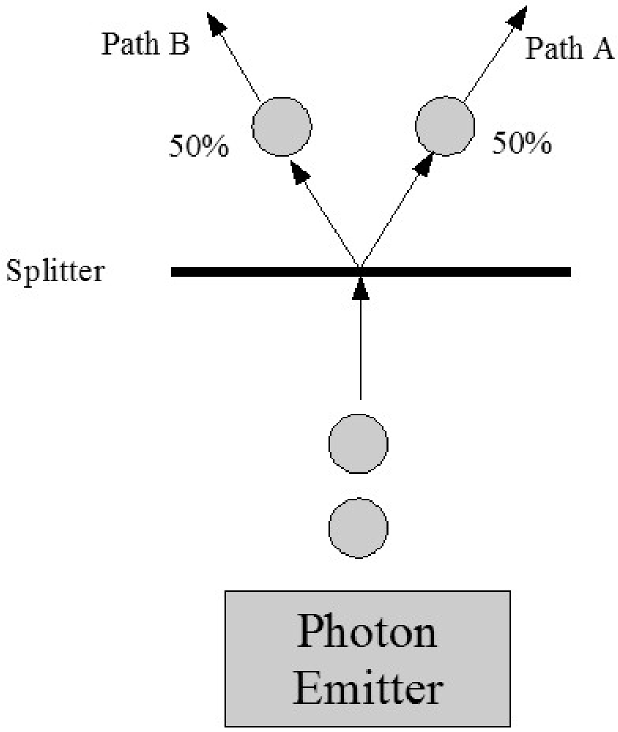


Figure 3: Photons working together to split into two equal groups

3. Messages exchange mechanism

Figure 4 shows two possible types of message exchange mechanism. The top diagram in Figure 4 shows the first type of message exchange mechanism. In this first type message exchange mechanism, the message and the field particles are two different entities. With each group of field particles, travels a message containing instructions about how to use the field particles. This mechanism suits better the situations in which there are involved large numbers of particles with somewhat similar behavior. Here this work, uses the term Message Particle for message as the message here is an independent entity and is able to travel with group of field particles.

The bottom diagram in Figure 4 shows another possible message exchange mechanism. In this message exchange mechanism the field particles itself contains the information about how the field particle is to be used. It suits best to the situations where there are only limited numbers of field particles are exchanged , as in the case of pion used in the realization of strong interaction.

In modern science, field particles are treated like billiard balls without giving any consideration to the well developed capabilities of particles to sense and react to the environment. All kind of particle behavior are linked to the rearrangement of electrons in the atoms. Assuming that the particles really interact with one another using messages, the role of messages in the changed behaviors of the particle cannot be excluded. Formation of semiconductor materials when silicon and the impurity metals are combined is an example of changed behavior of silicon. This work suggests that the messages also play a significant role in the changed behavior of the material, beside the rearrangement of the electrons. This work suggests that the behavior of matter is influenced by content of message. For example the silicon and the impurity metal have individual behavior controlled by the Message Type 1 and Message Type 2 respectively. When the two metals are mixed, new messages are formed with the conversion of existing messages. These new generated messages give the metal new behavior. Let's assume that the message type 1 and message type 2 are in equal quantity before merging. After merging, the new message type 3 and 4 may not be in equal numbers.

According to modern science, the energy is mediated through the flow of field particles. Based on this concept, it can be said that the magnetic force is conveyed through some type of field particle.

The diagram in 5 shows a unique key-hole mechanism, which may help field particles identify each other, while interacting.

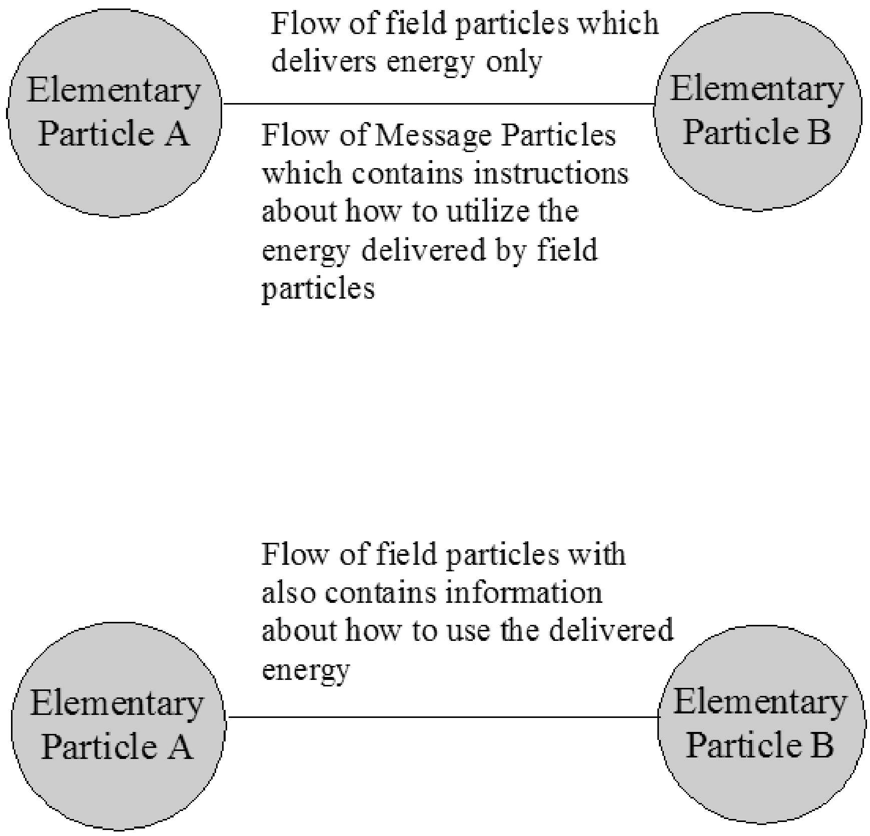
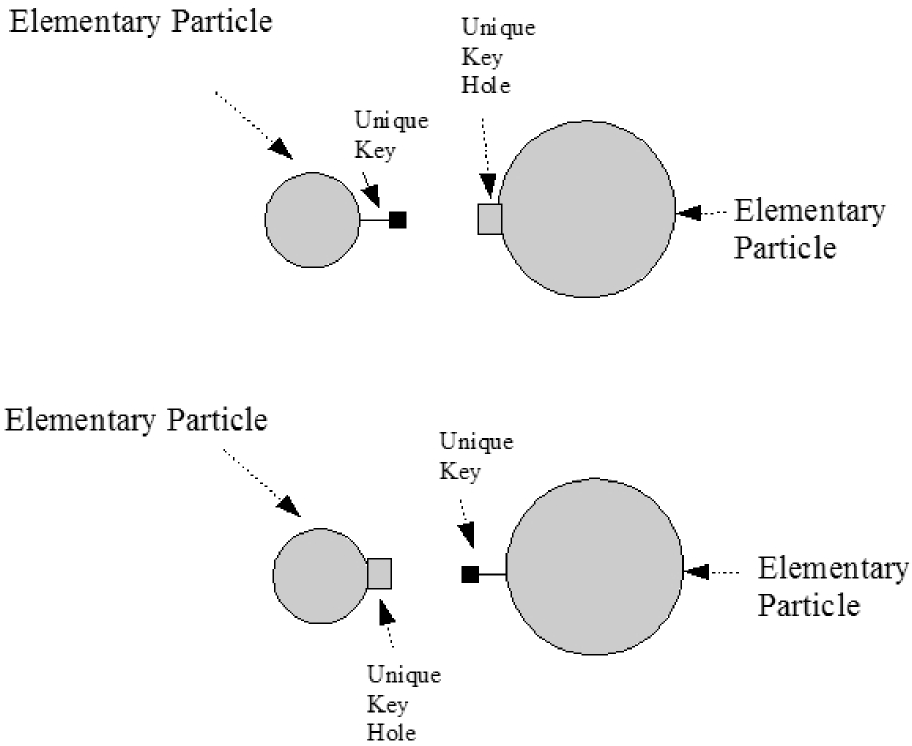


Figure 4: Types of messages



Step 1: Tries Keys
Step 2: Bond which each other
Step 3: Transfer the energy/message

Figure 5: Identification mechanisms for targets

4. Interaction between light and matter

Photoelectric Effect can be regarded as a physical effect involving matter (electron) and the light (photon). This work treats both electron and photons as particles with mass and also regards photoelectric effect as an interaction between two types of particles with mass. The interactions between photon and electron needs to involve information exchange in the form of messages according to the general observation of the behavior of the particles. Figure 6 shows the three different steps to explore the possibility of existence of message interaction among particles.

Step 1: Light source 1 emits light with frequency f_1 resulting in the photoelectric current I_1.

Step 2: Light source 2 with frequency f_2 generates photoelectric current equal to I_2.

Step 3: Light source 1 and light source 2 emit lights with frequency f_1 and f_2 respectively, at the same time resulting in the photoelectric current I_3. The light source 1 and light source 2 emits light toward the metallic plate from different angles so that there is no inference between the light beams from two sources.

As photons with two frequencies f_1 and f_2 creates different quantity of current I_1 and I_2 respectively, one can assume that the content of the message that accompanied photon with frequency f_1 is different from the content of the message that accompanied the photons with frequency f_2. There is a possibility that the sum of two different information contents is not the linear sum of individual contents, thus there should exist a pair of frequencies which satisfies the relationship:

$$I_3(f_1, f_2) \neq I_1(f_1) + I_2(f_2) \quad (1)$$

This work predicts the existence of combination of such frequencies f_1, f_2 and f_3, thus indicating the possibility of existence of message exchange among particles. Figure 7 shows another approach to explore the possibility of the existence of the message communication between particles.

Step 1: Light with frequency f_1 falling on the metallic emitter for duration t_1 generates current with intensity I_1.

Step 2: No light falls on the metallic emitter for duration t_2.

Step 3: Light with frequency f_2 falls on the metallic emitter for duration t_3 and generates photo-electric current I_2.

It is expected that the message that accompany the light has contents depending on the frequency as the behavior of the metallic plate is different at different frequencies. The different behavior here means that the amount of energy exchange that takes place between photon and the emitter metal is different at different frequencies. In the example of Figure 7, it is expected that the contents of the message accompanying the photons will be different at frequencies f_1, f_3 and f_5. If the validity period of the message accompanying the photons is larger than t_2, then photoelectric current generated during t_3 will be different or in other words:

$$I_2 \neq I_4 \neq I_6 \quad (2)$$

This work predicts the existence of a combination of f_1, f_2, f_3, f_5 and t_2 satisfying the above relationship. If the message exchanged between the interaction of particles, are not immediately consumed/annihilated but have a limited validity life, it indicates the possibility of existence of capacity of the storing information within the particles. Figure 8 describes the steps that can be executed to explore the capacity of the particles to store information. Each step is executed with small gaps t_2.

Step 1: Light with frequency f_1 falls on the metallic emitter for interval t_1 and generates photo-electric current with intensity I_1.

Step 2: Light with frequency f_2 falls on the metallic emitter for interval t_1 and generates photo-electric current with intensity I_2.

Step 3: Light with frequency f_i falls on the metallic emitter for interval t_1 and generates photo-electric current with intensity I_i.

Step 4: The frequency f_i is incremented with Δf for n times and each of this light is incident for interval t_1. There is a gap of t_2 between each of these steps.

Step 5: Now the incremental increase is disrupted. Light with frequency f_1 falls on the metallic emitter for duration t_1 and generates photoelectric current I_x. After interval of t_2 the light with frequency f_2 falls on the metallic emitter for duration of t_3 and generates photoelectric current I_y.

Assuming that the particle has a fixed capacity permanent memory area to store information contained in the messages that accompany the photons in the photoelectric effect, the memory contents changes as:

- Each step will store the message content accompanying the photons of specific frequency in the fixed memory storage within the particle.
- Each message content can be of variable length.
- It is expected that the memory storage area within the particle, which stores the information accompanying the photons is of limited size, some of the memory sub areas will be overwritten forming a completely new information when different kind of information of variable length is repetitively written after small intervals.
- If the stored information is used in defining the behavior of the particle, it is expected that the particle will behave differently compared to the time the process of storing different types of information started.

This work predicts the existence of a combination of t_1, t_2, t_3, f_1, f_2, f_i, Δf and n, which satisfies the following relationship, thus showing strong possibility of particle having memory storage capability:

$$I_1 \neq I_x \quad (3)$$
$$I_2 \neq I_y \quad (4)$$

Figure 9 shows another approach to verify the possibility of existence of memory storage capability in the particles. The proposed verification process consists of three steps:

Step 1: Light with frequency f_1 falls on the metallic emitter for interval t_1 and generates photo-electric current with intensity I_1.

Step 2: No light falls on the metallic emitter for interval t_2.

Step 3: Light with frequency f_2 falls on the metallic emitter for interval t_3 and generates photo-electric current with intensity I_2.

Step 4: Step 1 to Step 3 are repeated by increasing the intensity of the light with frequency f_1 during duration t_1. The photoelectric current that is obtained during t_3 is I_4.

This work predicts the existence of a combination of f_1, f_2, t_1, t_2, t_3 satisfying the relationship, thus showing the strong indication of existence of messages exchange and the memory storage within particles:

$$I_2 \neq I_4 \quad (5)$$

As according to Einstein $E = hf$, the change in the photoelectric current due to intensity of the incident light shows that the matter change their behavior according to the content of messages. Figure 10 shows another approach in which rather then the intensity of I_1, the duration t_1 is modified.

Figure 11 shows a proposed to probe the possibility of existence of the group behavior. The metallic emitter has two areas A and B, which are fairly separated from one another. $I(f_1)$ is the amount of the photoelectric current that will be generated if only photons with frequency f_1 falls on the surface area A of metallic emitter. $I(f_2)$ is the amount of the photoelectric current that will be generated if only photons with frequency f_2 falls on the surface area B of metallic emitter. In the case, photons with frequency f_1 on the area A and at the same photons with frequency f_2 on the area B. Theoretically, the photoelectric current with amount $I(f_1 + f_2)$ should be created for all frequencies. However, if any combination of f_1 and f_2 which does not satisfy the relationship below is found, it indicates the strong possibility of existence of group behavior using interaction through messages.

Thomas Wedgewod who was a maker of china observed in 1792 that all the objects regardless of their type and shape becomes red at the same temperature. This lead to the discovery of continues spectrum called blackbody spectrum. All bodies at higher temperature shows this continuous spectrum as shown in the upper illustration of Figure 12. However, the matter shows discrete lines at the lower temperature as shown in bottom diagram of Figure 12. These discrete lines in the spectrum are used as an argument to support the claim that the electrons in the matter exist in the discrete states. In short, the matter shows different behaviors at different ranges of temperature. If the behavior of the matter is assessed from the information processing point of view, it indicates that different logics works in the particles in different environmental conditions. It is a common trend throughout the world for several last centuries that the physical effects are described by single mathematical relationship. Any developed model that does not fit some part of the experimental data is discarded as incorrect. However, in the real observations, the behavior of the matter is different under different conditions. For example, the matter shows discrete spectrum lines at the lower temperature and the higher temperature, the spectrum becomes continuous. If we pay attention to the ability of the particles to interact with their environment, we need to reassess our traditional method of expressing the behavior of particles in a single step and try to understand that a behavior of a particle is best described by different mathematical expressions, each of which are valid under certain conditions. Even if some mathematical model does meet the whole experimental curve, it still need to be considered as valid. There is also a strong trend to stress that everything which was regarded as a continuous process is incorrect and now every attempt is made to show everything quantized. Quantized means that each observed value is a multiple of an integer. This work stress that discrete and continues are the different aspects of the same thing. This work suggest the presence of reference time signals, whom particles use to synchronize their behavior. Figure 13 shows the discrete and continuous behavior. The discrete behavior starts at any time signal and continue until it is finished. In case of continuous phenomena, an action starts at a time signal and continues until a time signal. Continuous behavior has only start condition, while the discrete behavior has both start and the end conditions. According to this work, the past approach and the modern approach both complements each other in the nature.

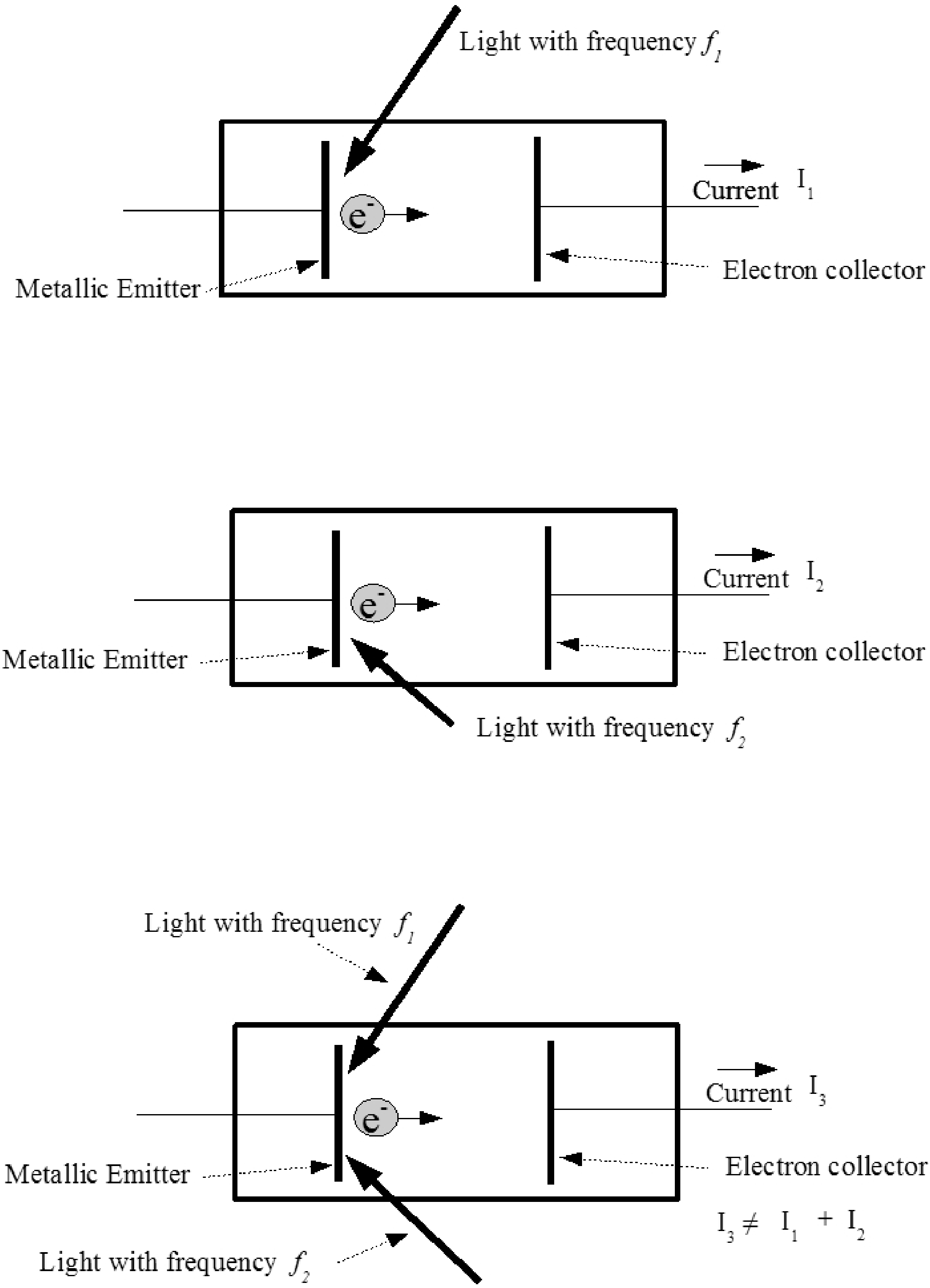


Figure 6: Non-linear sum of photoelectric current

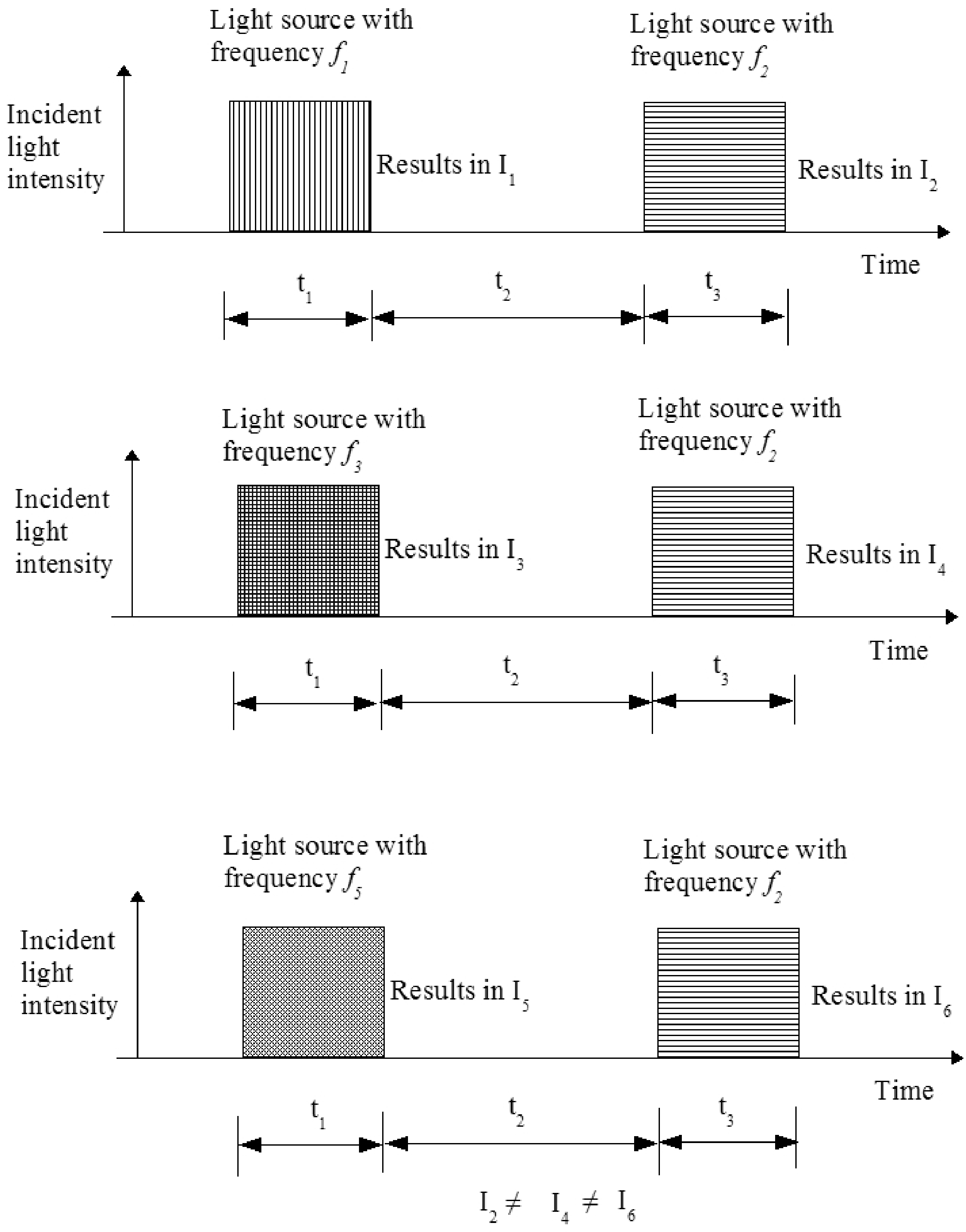


Figure 7: Message contents depending on the frequency

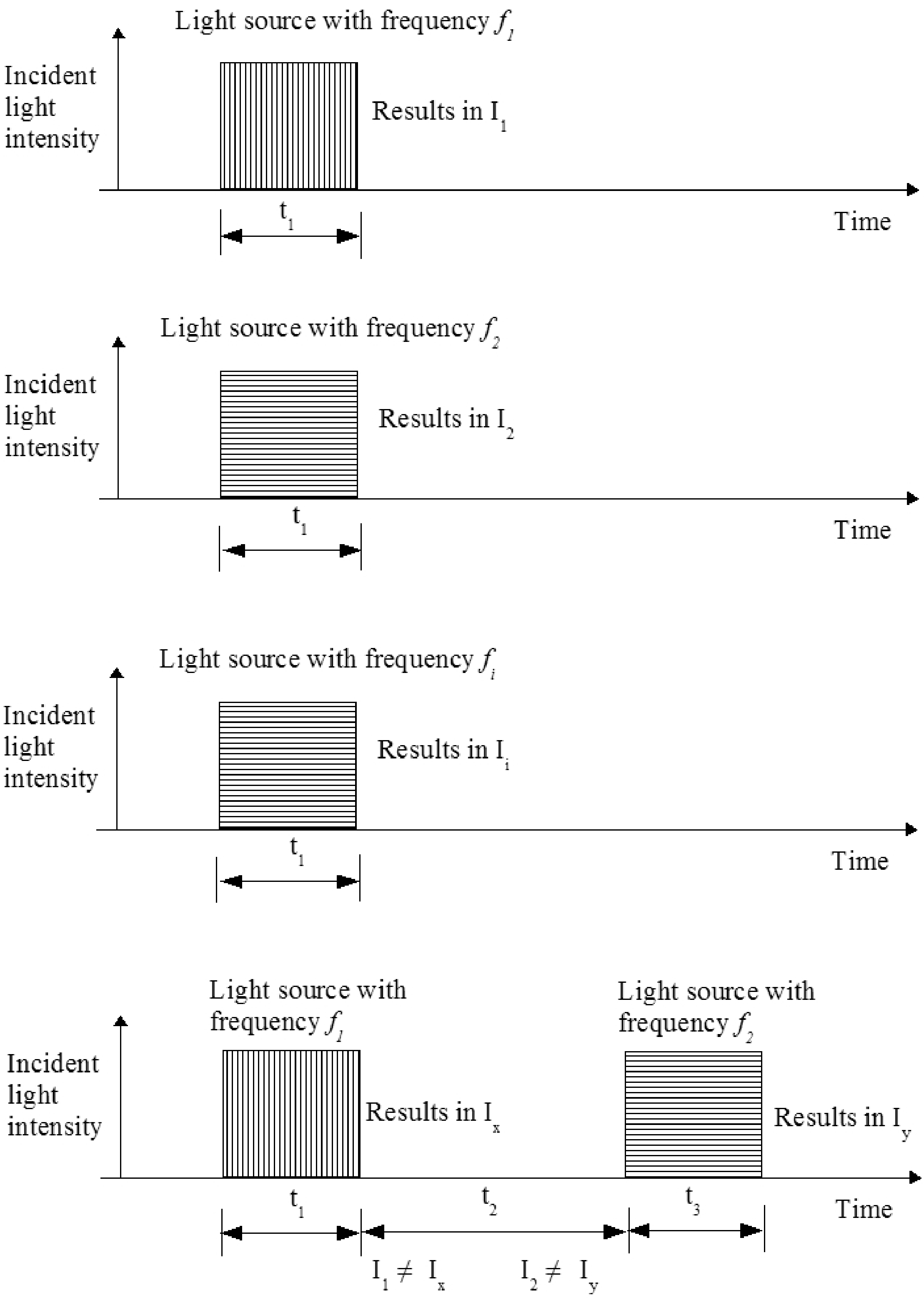
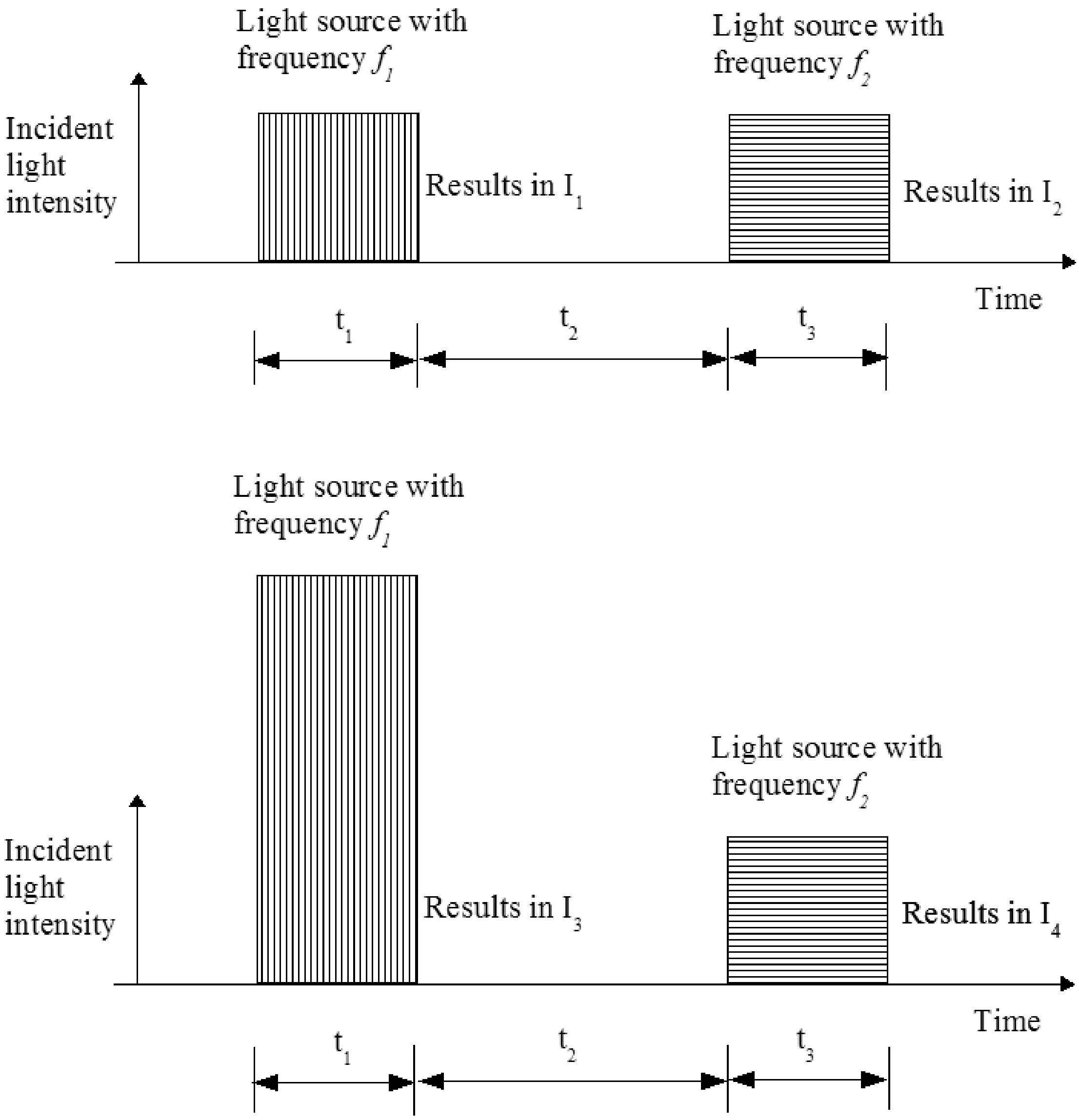
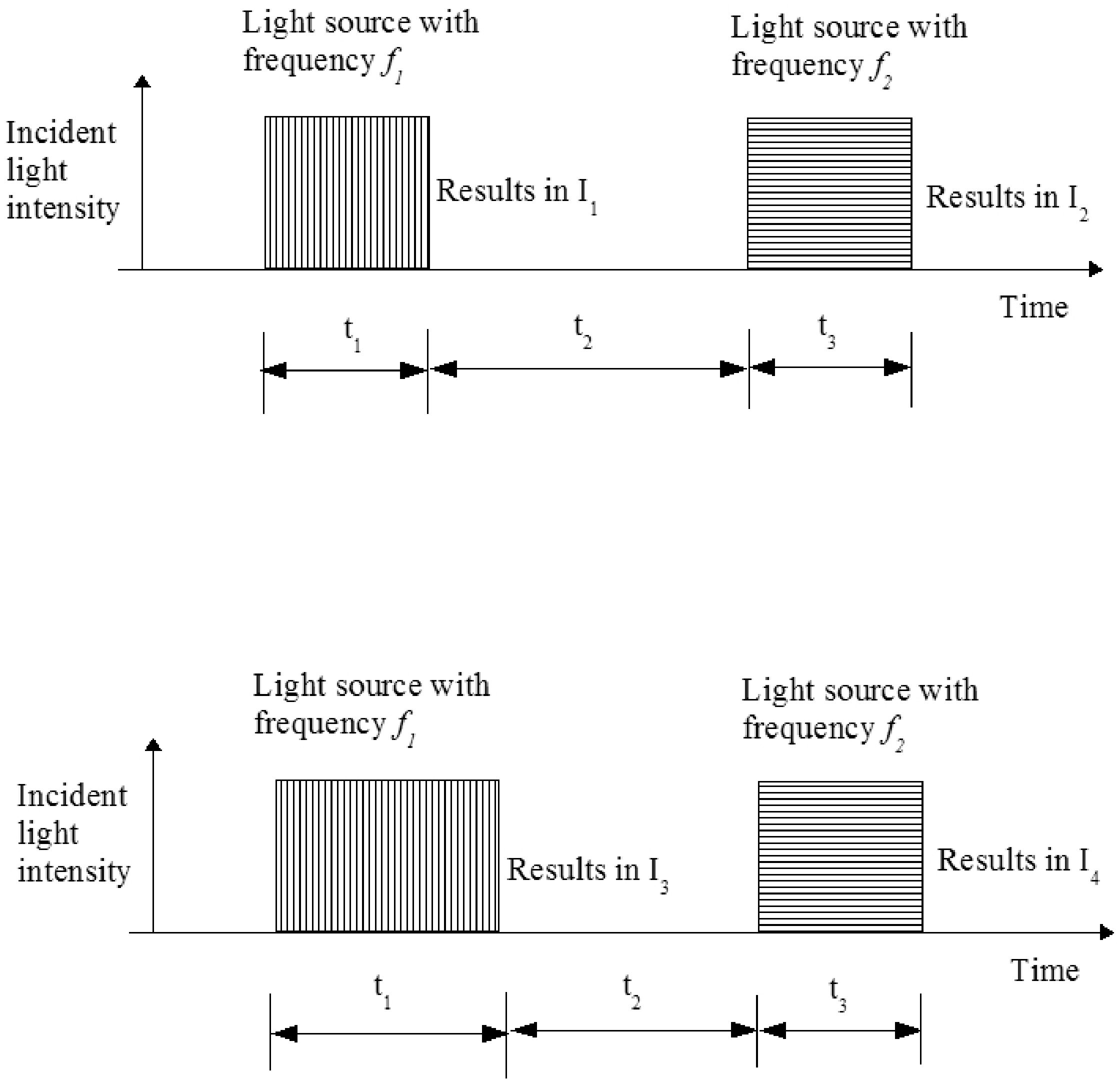


Figure 8: Memory functions in particles



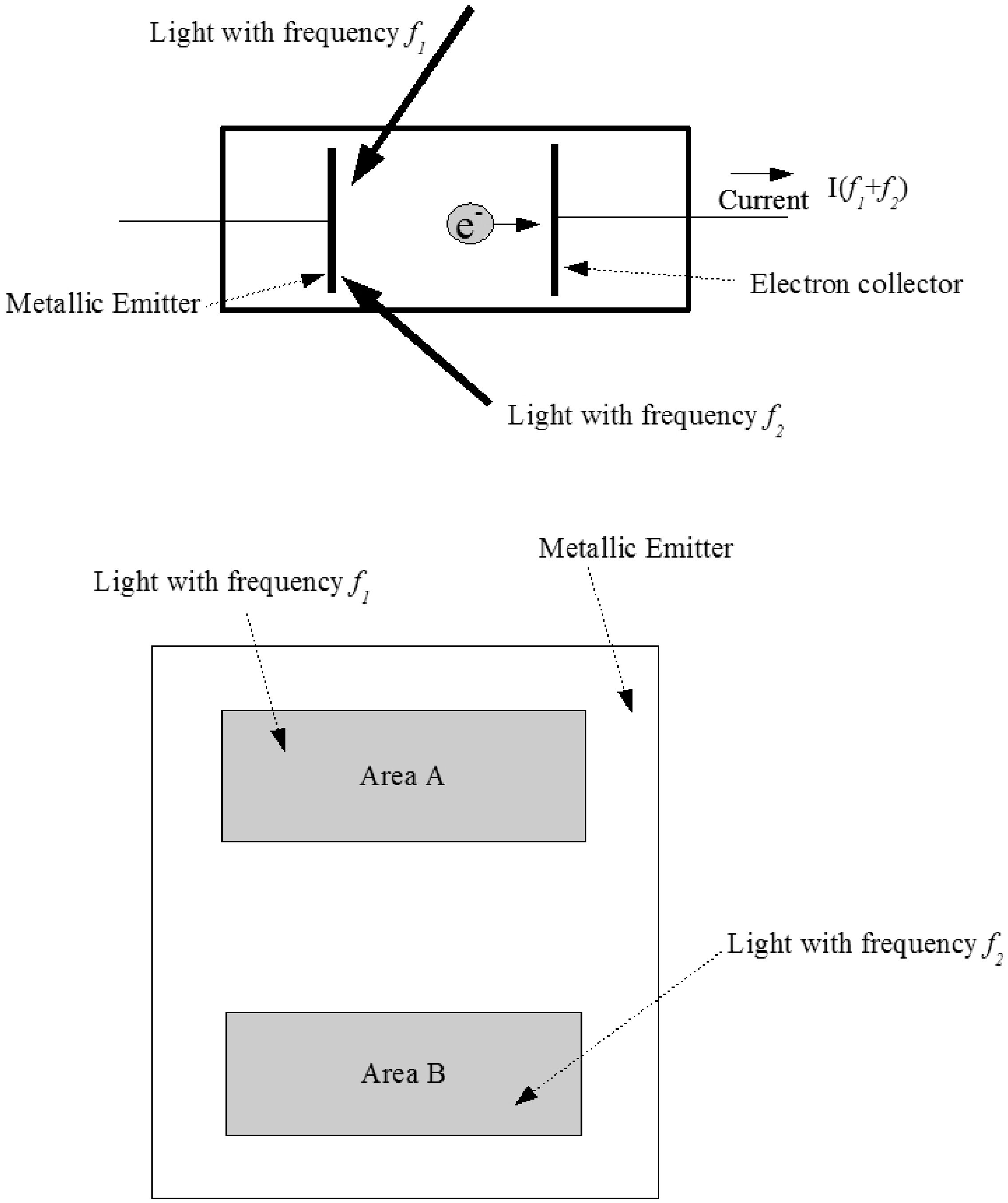
$I_2 \neq I_4$

Figure 9: Photons as message for the particles



$$I_3 \neq I_4$$

Figure 10: Photons as message for particles



$$I(f_1+f_2) \neq I(f_1)+I(f_2)$$

Figure 11: Group behavior

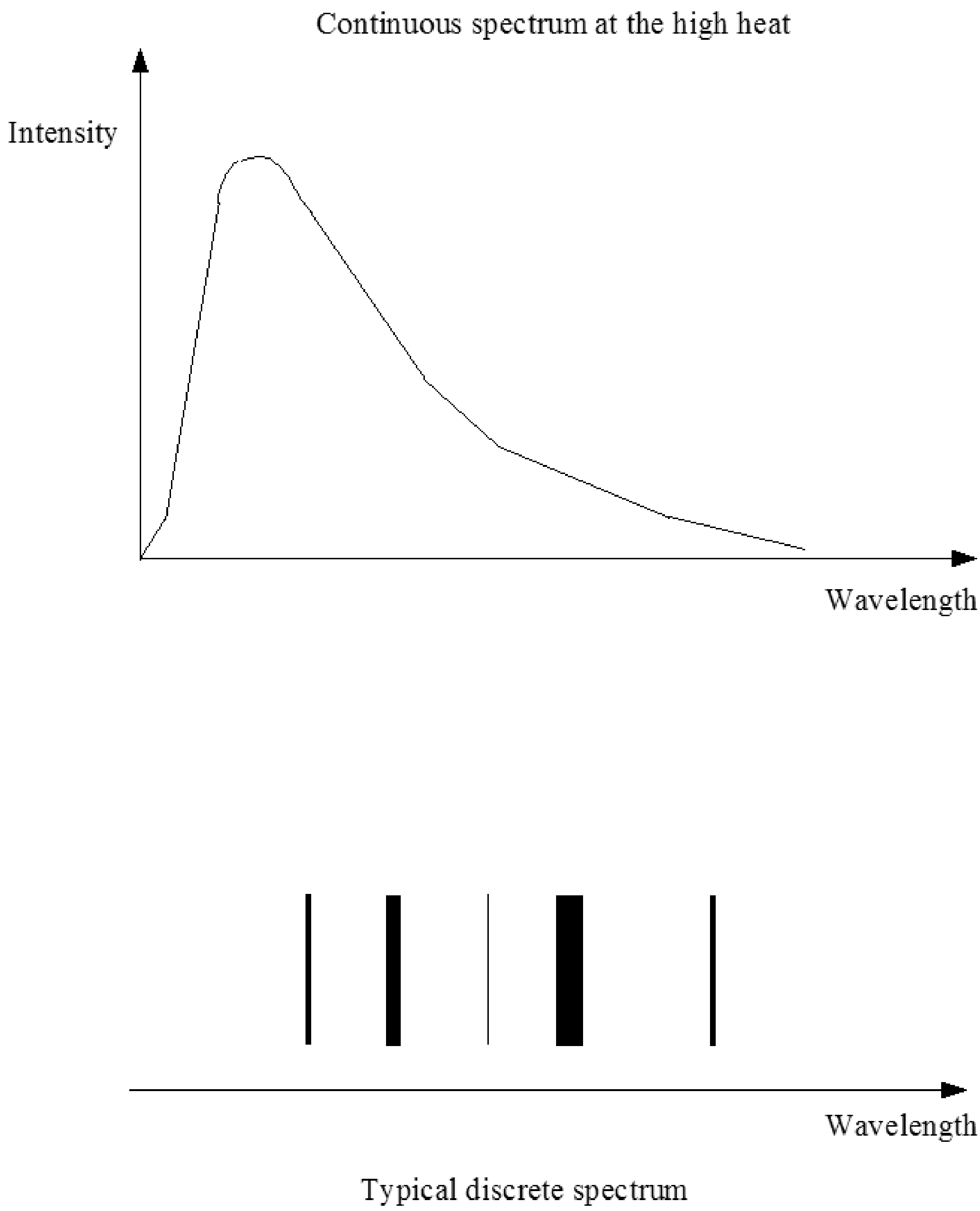


Figure 12: Multistep behavior

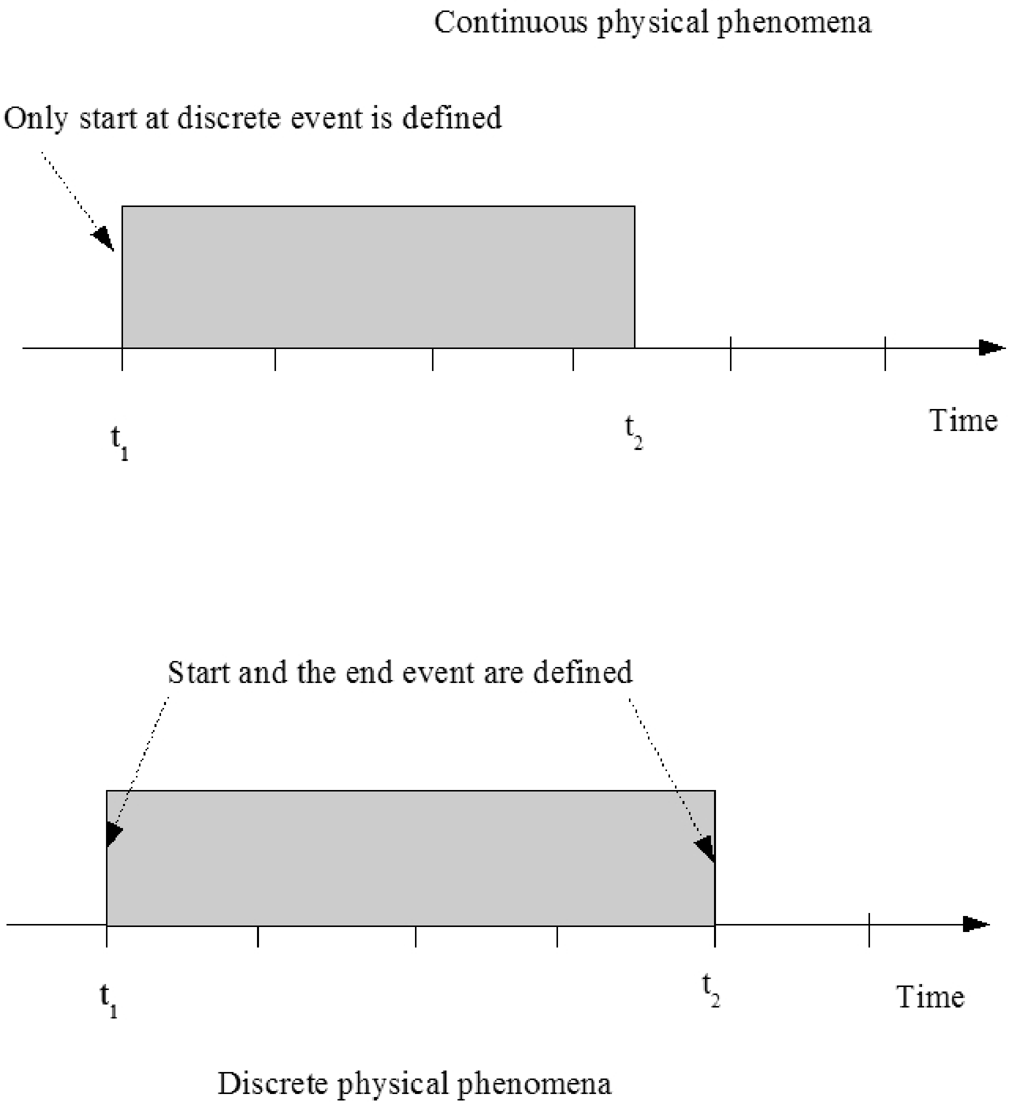


Figure 13: Multistep behavior

5. Pattern of interaction through messages

This section describes different types of message interaction patterns between the particles, under the assumption that there is a strong possibility of particles using message communication to exhibit a well coordinated group behavior. Figure 14 illustrated different interaction patterns.

Messages from source to target

In this pattern, the message flows from the particle which is the source of the field particle toward the target particle. In Figure 14 only one target particle is shown. In the real situation, there can be large number of target particles.

Messages from Target to source interaction pattern

In this pattern, the message flows from the particle which receives the field particle to the source of the field particle. It can be useful in cases such as:

- Target particle informs the source particle that it does not need more field particles.
- Particle which needs field particles send message to other particles informing their need for field particles.

Figure 14 illustrates message flowing from one single target to a single source. In real situations, a target particle may send messages to multiple source particles.

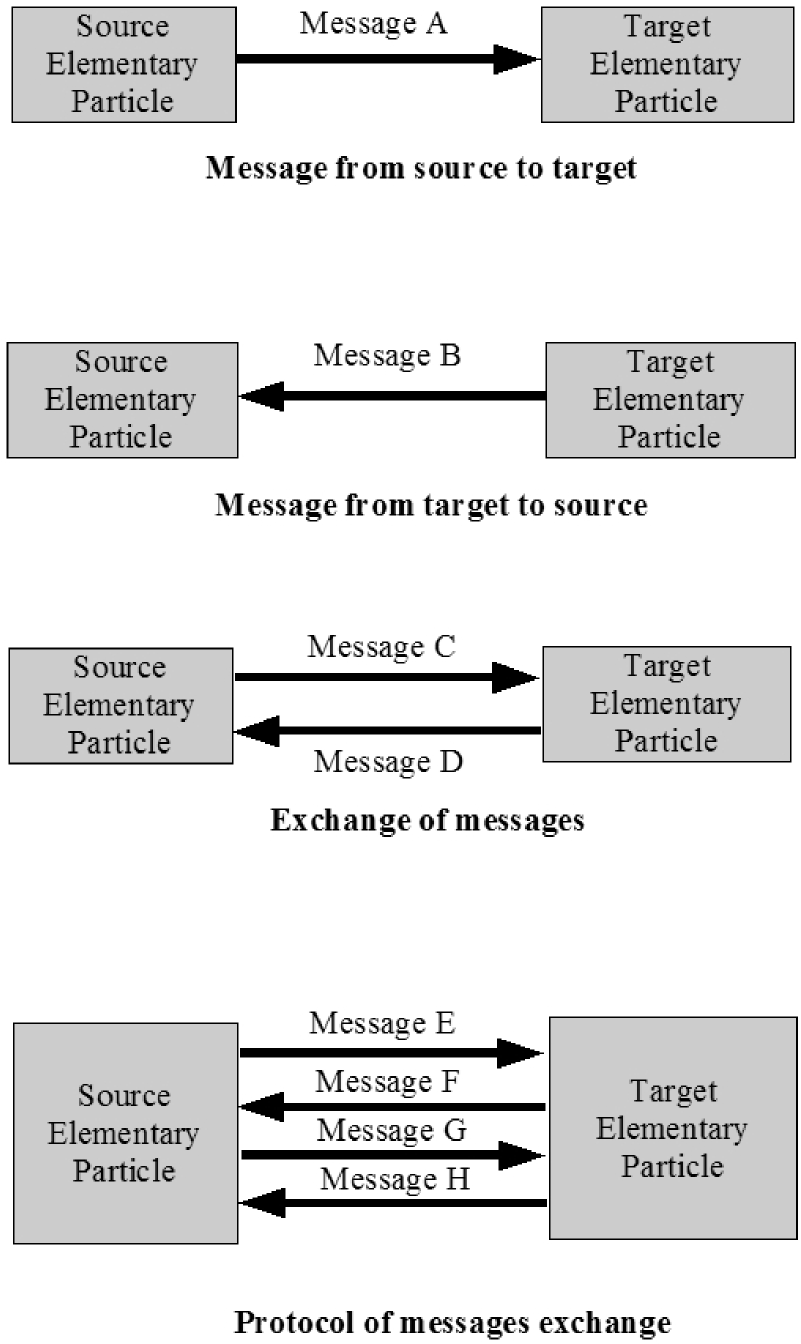


Figure 14: Patterns of interaction through particles

6. Message processing in nature around us

It is a common observation that the flat structure falls toward earth with less speed compared to the non-flat structure even when both have the same mass. Figure 15 illustrate this phenomena purely from the point of the information processing of this work. To understand Figure 15 let's assume that:

> *r*: A particle in flat and non-flat structure process information from particles which exist within the radius *r*.
>
> *m*: The number of particles that form the lower layer of thickness *a* in the non-flat structure.
>
> *n*: The number of particles that form the lower layer of thickness *a* in the flat structure.

Obviously,

$$m < n \qquad (6)$$

$$I_m(r) > I_n(r) \qquad (7)$$

Where,

> $I_m(r)$: Average information received by each particles forming the lower layer of thickness *a* in the non-flat structure from the surrounding particles in radius *r*.
>
> $I_n(r)$: Average information received by each particles forming the lower layer of thickness *a* in the flat structure from the surrounding particles in radius *r*.

Assuming that the total capacity of information processing of a particle in the both flat and non-flat structure is I_{Total} and the particles forming the flat and non-flat structure give priority to the information coming from the neighbors then:

$$I_{Total} - I_m(r) < I_{Total} - I_n(r) \qquad (8)$$

The particles forming the lower layer of the flat structure have more capacity to process the information accompanying the gravitons coming through the earth surface compared to non-flat structure. In other words, the flat structure is in position to consume gravitons coming through the earth with better efficiency and thus need not rush toward earth with greater speed like objects with non-flat structure.

Let's another example of the phenomena of sailing of the ships as shown in Figure 16. Assume two ships of exactly same weight. The ship which does not have a flat bottom will sink in the water, while the ship with the flat bottom will be able to float on the surface of the water. As in the previous example, one can say that the flat structure helps process more information coming from the surface of the water and thus allow ship to remain floating on the surface. It is also known from the classical mechanics that the force is proportional to the mass. However, the force that the ship receives from the water is independent of the mass of water that exist beneath the ship bottom. In simple words, the ship gets the same force from the water regardless of the depth of the water. Such phenomena is not possible, without involving information processing.

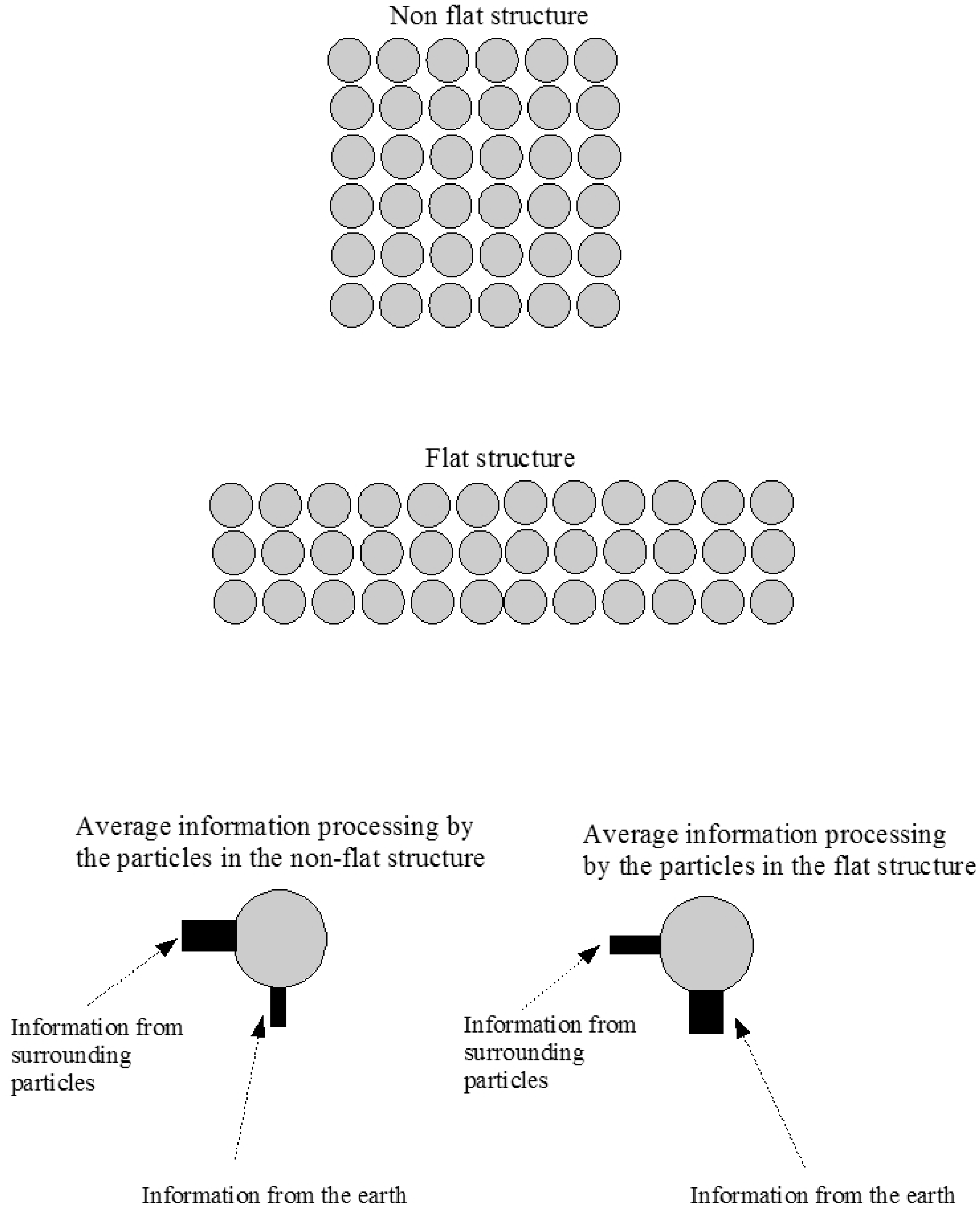
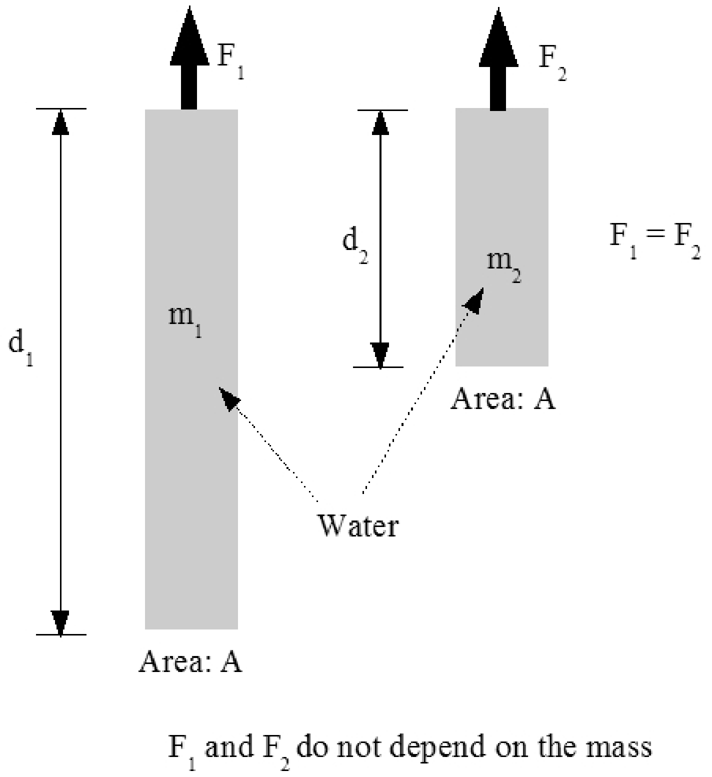


Figure 15: Flat structure reduce the impact of gravity



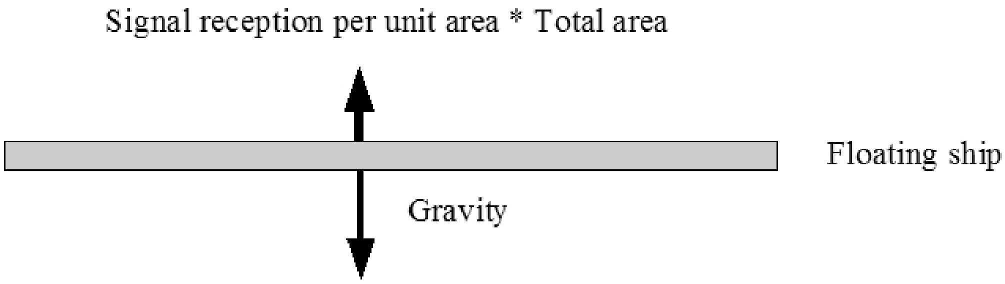


Figure 16: Force is not dependent on the mass

Other free publications from the author

DESIGN OF A RESILIENT CORPORATION
ISBN: 9780986474040
This publication provides tips about how to make a corporation recession proof.
Download link: http://abctsau.org/ResilientCorporationDesign.pdf

HIDDEN ASPECTS OF THE EVOLUTIONARY THEORY
ISBN: 9780986474040
This publication discusses the secret aspects of the evolutionary theory.
Download link: http://abctsau.org/NaturalSelectionBook.pdf

RETRAINING BRAIN TO CURE MENTAL HEALTH ISSUES
ISBN: 9780986474026
This publication discusses the possibility of retraining the brain to cure mental health issues.
Download link: http://abctsau.org/BrainBook.pdf

EXPERIMENTS TO PROBE ALTERNATIVES OF MASSIVE PARTICLE
ISBN: 9780986474033
This publication provides some experiments to probe alternative of massive particle.
Download link: http://abctsau.org/ExperimentBook.pdf

THE PARTICLE AS A MEMORY ALBUM
ISBN: 9780986474019
This publication provides discusses the ability of particles to capture, retain and emit images.
Download link: http://abctsau.org/MemoryAlbum.pdf

INTELLIGENT PARTICLE
ISBN: 9780980561005
This publication provides clues to the mysteries of the modern science.
- What is the relationship between light and gravity?
- Why mass and gravity cannot travel faster than light?
- How mass converts into energy?
- Why objects with different mass fall with the same speed?
- Why speed of light need to be variable?
- How particles interact with the field particles?
- How universe is heading toward its end?
- This book details the background of presented claims and also provides simple ways to experimentally prove claims right or wrong.

Download link: http://abctsau.org/IntelligentParticle.pdf

BLACK HOLE AS A VITAL ORGAN OF THE UNIVERSE
ISBN: 9780980561012
This publication details the role of black hole in the formation and functioning of the universe.
Download link: http://abctsau.org/Blackhole.pdf

HOW TIME WORKS
ISBN: 9780980561050

This publication explains why the length of time we experience, differ from person to person.
Download link: http://abctsau.org/Time.pdf

BUILDING PYRAMIDS USING PRIMITIVE TECHNOLOGY
ISBN: 9780980561067
This publication illustrates engineering methods which can be used to build pyramids.
Download link: http://abctsau.org/Pyramid.pdf

ALTERNATIVE TO MASSIVE PARTICLE
ISBN: 9780980561074
This publication discusses the alternative to massive particles.
Download link: http://abctsau.org/MassiveParticle.pdf

THE SPACE TRAVEL OF THE PHARAOH
ISBN: 9780986474002
This publication explores the truth behind the claims of space travel and alien visits by The Pharaoh.
Download link: http://abctsau.org/Spacetravel.pdf

REVISITING THE BASIS OF MODERN SCIENCE
ISBN: 9780980561081
This publication is a collection of papers discussing some of the basic concepts of modern science.
Download link: http://abctsau.org/RevisitingTheBasisOfModernScience.pdf

DYNAMIC GRAPHICAL USER INTERFACE
ISBN: 9780980561043
This publication describes a method, which dynamically checks the availability of the hardware resources at the client and dynamically switches the graphical user interface without any manual intervention of the user.
Download link: http://abctsau.org/DyamicGUI.pdf

LOAD BALANCING FOR CORPORATE SOFTWARE SERVICES
ISBN: 9780980561029
This publication introduces a load balancing mechanism for software services.
Download link: http://abctsau.org/LoadBalancing.pdf

OPTIMIZED SERVICE REQUESTS FLOW IN A GLOBAL SERVICE ORGANIZATION
ISBN: 9780980561036
This publication describes an approach which uses the past history of the activities of the service requester for determining the appropriate area of service.
Download link: http://abctsau.org/GlobalServiceOrganization.pdf