Relativity and Universal Time

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Introduction

This paper illustrates how a unique set of events exists in the Universal Present in space and explains how Universal Time is not in antithesis with the different perspectives of proper time described by special relativity.

I revise the Minkowski spacetime model, arguing that it requires a Universal Present, not despite but because of the relativity of simultaneity to different inertial frames.

There are no privileged observers and infinite observers have their own proper presents, and yet there is a privileged observation: the Universal Present, the instant at which all simultaneous events come to be. We can tell “Here-Now” as well as “There-Now”, even “Everywhere-Now’”.

Past events do not co-exist with those of the present, but reverberations of past events do: all reverberations lie on the Universal Present and interact with each other through electromagnetic and gravitational information when they occur at the same place, at the same time. Point-events, temporal relations connecting them and the whole of spacetime exist through a Universal Time. Matter exists only in the Universal Present line. Movement through time is intended as the progression of Universal Time, from the Past to the Future.

This theory implies that matter exists only within the Universal Present.

Notes

The model presents time space with a geometric two-parameter model of time and of one-dimensional space.

I followed the idea that no matter what we are looking at, and no matter how far or close we are looking from, we see things as they were, and not as they are at the exact moment we are looking.

I adopted the following assumptions:

- Time is the realm when all the events occur and when everything exists, and that can be described on a scale t belonging to the set of real numbers.
- Space is the realm where all the events occur, and distance can be measured on a scale d belonging to the set of positive numbers.
- We experience an individual time moving from the past to the future.

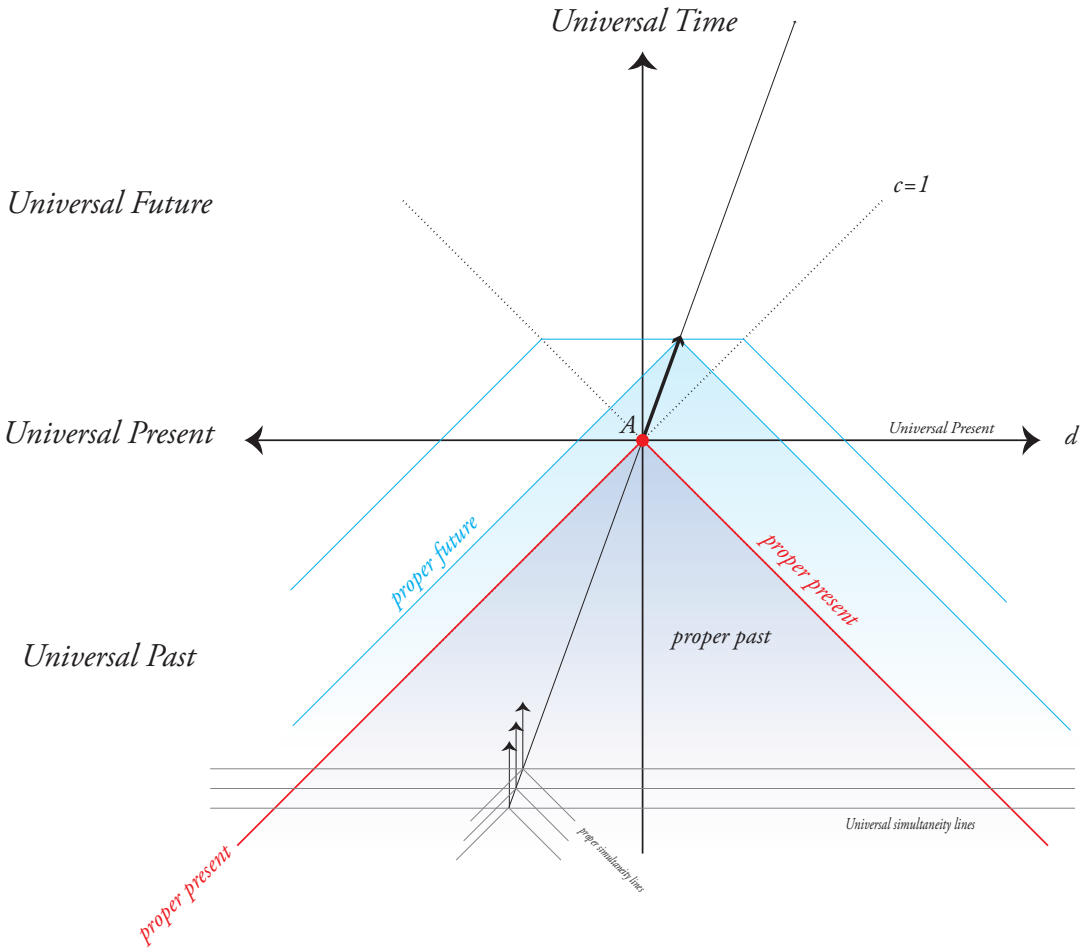
- Present is the exact time at which events occur and exist in space simultaneously.
- Motion exists in two forms - uniform motion and acceleration - and in a combination of the two. Each motion has a universal constant: light speed and gravitational acceleration. In this paper I focus on the constant speed of light.

The Minkowski spacetime and Universal Time

By elaborating on the idea of spacetime as represented by Minkowski[1], this paper presents a model compatible with the existence of absolute time, a Universal Time which applies everywhere in space.

Here I represent a simplified model revising the Minkowski spacetime on a two-dimensional Cartesian plane. Figure 1 illustrates the light cone of an event A in an inertial frame, moving at speed $v < c$.

Figure 1: Universal and proper time



[1] Minkowski, Hermann, *Raum und Zeit* [Space and Time], Physikalische Zeitschrift, 1908–1909

The proper present of A lies on the past cone border. Still, it is perceived in the same present space. The proper past of A is represented by the grey area underlying the proper present. The proper future of A lies on the future past cone borders.

On the other hand, the Universal Present lies on the space line. Each point in space corresponds to a different individual present, while the sum of all points in space correspond to the Universal Present, where all proper presents happen simultaneously. Universal simultaneity lines, i.e. space at different times, are representations of past and future universal presents.

Universal Time is like a ruler establishing the direction from the past toward the future. Universal Time arrows never change direction, like time arrows of an observer completely still, untouched by any force. Its unit of measure is constant, described by the constant values c and G, yet it is perceived differently by each observer. In fact, individual time arrows present different units of measures, as described by Lorentz transformations for inertial frames and by General Relativity for accelerated frames. The motus constants of Light and Gravity are like exchange rates to translate proper times in Universal Time.

Each event has its own proper present. Each event can affect the Universal Future, but it can not observe the Universal Present and has information only about its proper present and memory of its own individual past. All proper presents are reverberations of the Universal Past; they are filled with information of the past, which Light and Gravity keep alive in the Universal Present. There is no mass in proper presents, with the exception of the point at the vertex of the cone, i.e. the observation point lying on Universal Present: there was mass in proper presents, while Light and Gravity connect everything. Mass exists only in the Universal Present.

For example, if we think about the solar system in terms of Universal Time, we may say we are not revolving around the real Sun, but around its manifestation in our present in space-time. In the Universal Present, we are revolving (very slightly) behind it, following it like the tail of a comet together with the other planets. When we look at the Sun, we are looking at a space that is in fact already empty.

In the meanwhile

What we see and feel is an hologram of the past, a reverberation: light and gravity bring the projection of what was happening in the Universal Past into our present. This is why we can see past events happening in our “now”. Or rather, this is why past events physically affect our present.

There are two ways of looking at the Universe:

- the space-time perspective, when we think in terms of relative time and a specific observation point while observing the reverberations of the masses;
- the time-space perspective, when we think in terms of Universal Time and simultaneity across space while observing the actual dislocation of the masses.

This brings to the Heisenberg's uncertainty principle and wave-particle duality. The very concepts of exact position and exact velocity together become meaningful if interpreted through the different time-space and space-time perspectives. The uncertainty principle arises from the wave-particle duality. Duality is given by the fact that we can observe a given physical phenomenon in Universal Time or in a given proper time. In fact, when we observe the position of a particle, we are looking at it in the proper present (we see it motionless for an instant, and then it disappears). Instead, when we observe its momentum, we observe a wave of photons traveling on the Universal Present and crossing our proper present.

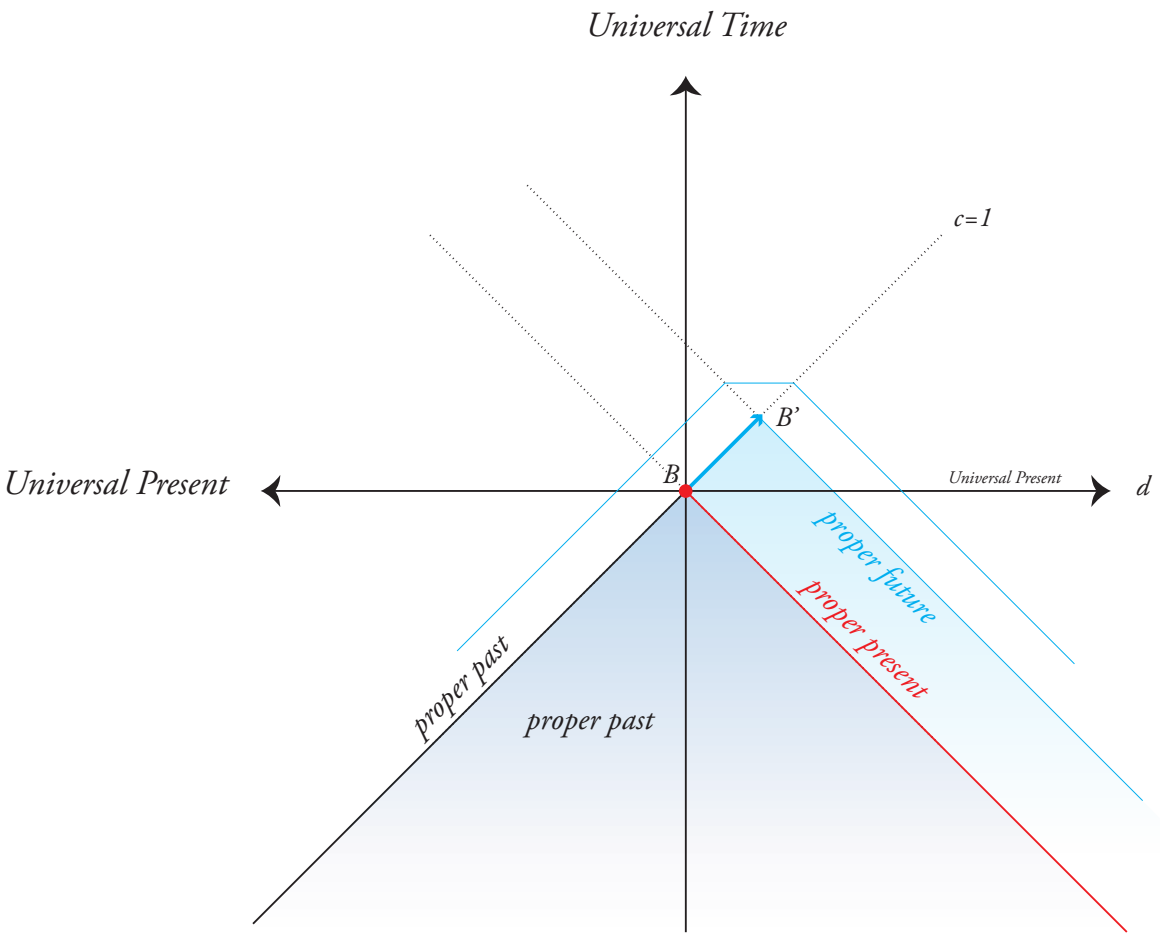
If something happens in a proper present A, it means that it already happened in Universal Time, in another proper spacetime B. Meanwhile, something else is already happening in B, something that will reach A later on. If we consider the Universal Present as a whole, there is always something happening that will be reverberating, affecting proper presents one after the other. This relativity of simultaneity in different inertial frames requires that there is a continuum in Universal Present, since proper presents receive continuous reverberations from past events.

“In the meanwhile” can always be considered in time-space perspective.

The asymmetry of Light time

A final consideration: there is an asymmetry between the Light proper present and the proper presents of entities moving slower, as showed in Figure 2.

Figure 2: Light time



As a result, we cannot see the beginning of the universe, no matter how far we look. The beginning of everything inevitably belongs to our past, therefore it is no longer observable for us. In fact, not even an observer at the edge of the universe can see its origin on its proper present, because in order to be on the edge it should have been moving at the speed of light, but it cannot observe its own past.

Conclusions

There is a Universal Past, Present and Future, and infinite perspectives of it.

Universal Present is filled with mass, electromagnetic fields and gravitational fields, while proper presents are only filled with electromagnetic and gravitational fields, with the exception of the

point of observation which is lying on the Universal Present line. Universal Future appears to be empty, while proper futures belong partially to the Universal Past.

Causes can be very distant in time and nonetheless impact the present directly. The past is kept alive by Light and Gravity reverberations traveling in the Universal Present. Together, all the information describes the universe and the interactions among events.

Causal effect and free will can coexist thanks to the fact that the Present is Universal. If it is possible for someone to independently act and modify motion, that someone can impact the momentum of events in its own present, therefore causing a personal impact on the future.