



UNIVERSE COMPOSITION AND EVOLUTION

Universe consists of some billions galaxies which contain some billions stars. Planets (solid, liquid, gaseous, or the 3 like Earth) that sometimes have moon, gravitate around the stars. Asteroids (small planets) complete solar system, as the meteors (asteroid debris) and comets (gravel and ice) brought by Oort cloud. The sun spray them into a beauty when they get closer. There are so much stars (10 trillion of billion) that every human on the Earth could choose his star, as our ancestors since prehistory could have done, and those who will follow us could do in the future, assuming that we are only at 1% of the History of Humanity. After immensity, let's talk about infinitely small : elementary components of the universe are electromagnetic waves (including especially the light), particles (like electrons and neutrons for example), gas (atoms or molecules), powders (heap of molecules) and black matter, mysterious since electromagnetic waves which are foreign for it, make it invisible, but its existence is betrayed by its gravity. Those components evaluate : fusing, nucleus fission, fission, chemical development of electrons, light mystery that is a wave, a particle, and an energy on the same time. Universe development is a rapid expansion, explosive at the beginning (Big Bang), which created progressively elementary components, stars and all celeste and earthly objects. Stars evaluate. During their lives, they are gas and powder nebulae, concentrating in different types of stars (temperature, size, color...). In the future these stars will explode or collapse to become novae, pulsar, dark hole, or become nebulae again. Space and time are the same measures. The speed of light is unchanging regardless of our speed, because time varies with observer's speed : the more we speed, the less we get older. That is what Einstein discovered. So we might have to twist the space to travel without speed through the universe. Regarding gravity, it is a curvature of the space around a mass. Thus, even the light which have no mass is deviated by gravity : the sun deviates the rays emitted by the stars, that we can see at an other place in case of eclipse. We can also see an other galaxy hidden behind a dark hole. Concerning the light close to dark holes, it is so deviated that dark holes absorb it. These deviation effects of the radio waves of the GP by Earth, Moon, satellite movements, when we will be able to calculate it more precisely, we will be able to install terminals precise enough to detect and prevent earthquakes. While particle emitted by the sun arrive on Earth, they create aurora borealis crossing the atmosphere. Meteors create shooting stars in the atmosphere. We observe also a lot of other phenomenon : movement of the stars create eclipse and tide. Tides are due to stars size : even if for two stars which gravitate close to each other inertia and gravity balance globally, these strengths are different according to geographic distance. On one star, on the closest point from the other star, gravity wins whereas at the opposite of this other star, inertia wins. Two tide bump are created the closest possible to the other star and its opposite. Bump propagation is more or less rapid according to the star composition: propagation is rapider in the atmosphere, oceans than on earth's crust. A slowdown of the rotation of the stars and a distance is produced (the moon was so braked by the tide created by the Earth, that light powders of the Moon were accumulated on the opposite of Earth : The moon became roly-poly toy in resonance that always show us the same face). Regarding life and our Earth, they modeled during the last billion years when earth's crust started to be formed, allowing cellules and then living being to appear, at the same time tectonic plates were moving and mountains were forming or eroding. According to where you look at, the world is an explosive movement or slow, a dense matter or a full vacuum. But the world contains a lot of big things, time, strength and mystery.

HISTORY OF THE UNIVERSE

0s	Time, space and void do not exist. There is nothing
10 ⁻⁴³ s	Universe is starting : its explosion is starting. It is very small and burning. Diameter 10-25m and temperature 1 032K
10 ⁻³⁵ s	First particles appear
1s	First radiation appear. Temperature 6 109 K
10s	First atomic nucleuses appear
3min	The simplest atomic nucleuses (made of helium and hydrogen) appear. Temperature 109 K : universe chills, It is Big Bang end.
100 000 years	First atoms appear. Electrons do not block the photons anymore which are propagating : light is separating from matter. Universe is not dark anymore. Today electromagnetic waves cover a large spectrum, from the lowest frequency of radio waves, microwaves, infrared, light Human can see, UV, x-rays, to the highest frequencies of strong gamma ray, emitted by supernovae. Its gravity also shows that a black matter is present in the Universe but invisible.
1 000 000 000 years	First galaxies appear, with their stars, interstellar gas, and their large central dark hole which aspires and illuminates a quasar. Each one moves away from each other, continuing universe expansion less explosively than at the beginning. This distance do not prevent from collisions that still occur today : two spiral galaxies distort or fuse to form an elliptic galaxy. Powders come together heating. Although the major part of the stars is captive from a galaxy, some stars circulate freely. In the future, the universe may continue its expansion, or all of that will form a big crunch ?
9 000 000 000 years or T(today) -5 000 000 000 years	A nebula evaluates to create the sun and its planets
T-3 000 000 000 years	Chilled, Earth has a bark, oceans and life appear. Unicellular organism with DNA chain grow up
T-2 000 000 000 years	Cells have a nucleus, which permits them to interact.
T-1 300 000 000 years	First multi cellular organism appear.
T-800 000 000 years	Birth of corals and mollusks
T-700 000 000 years	Shells and plants appear
T-500 000 000 years	Reptiles and insects appear
T-260 000 000 years	Simultaneously with life development, Earth bark forms, Pangea has already started to separate forming 14 tectonic plates moving respectively to the other. Dinosaurs disappear violently, and mammals and birds appear.
T-4 000 000 years	Hominids appear
T-750 000 years	They use fire
T-200 000 years	Prehistory starts, Human is nomad, he sculpts, paints, and speaks
T-10 000 years	Agriculture is invented : Human becomes sedentary. That is the beginning of history and culture
T-5 000 ans	Cities, irrigation, writing, money, trade are organized
T=13 700 000 000 years after universe creation	It is today, you are alive and pleased under the stars.