

Dear All,

Happy New Year! And I hope everyone is doing well.

Our last topic was on “Mind Set” using large numbers to open our minds and breaking through our small thinking boxes that is our egos.

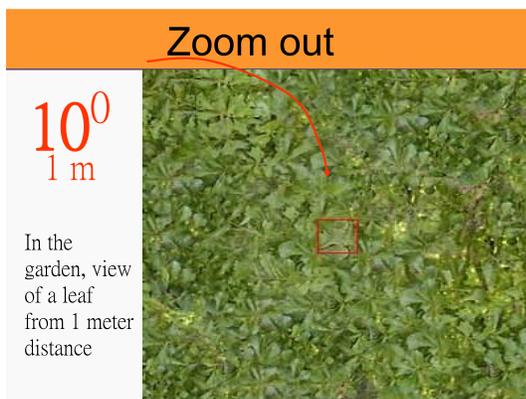
Today I would like to introduce an expanding concept - “**Mind opening**”... the microscopic and macroscopic view of the universe. This is a multi-dimensional scale of increasing large numbers and decreasing small numbers. We will put some reality into these numerical dimensions.

We are about to embark on an astonishing journey of exploring the galaxies and the subatomic particles.

At the end of the journey, we can realize we are the continuum of realities and dimensions, until our egos start putting a divider/box at a particular dimension and define this as my entity, self (a separated self from others). **This divider is the thinking box.**

The microscopic and macroscopic scale is a speedy and effective way to transcend duality view. Continuum is non-duality.

Let us start the journey at ground level dimension ($10^0 = 1$ meter) and we are going upward to macroscopic scale first. We shall increase our distance with speeds by the power of 10. From the power of zero, $10^0 = 1$ meter, $10^1 = 10$ meters, $10^2 = 100$ meters, $10^3 = 1$ kilometers and so on until we reach cosmic macroscopic infinity.



At this dimension of our daily life, a leaf has its usual appearance. The center of the square is where our eyes focus at point zero.

Zoom out higher

10^1
10 m

At 10 meters high, we see a cluster of vegetation

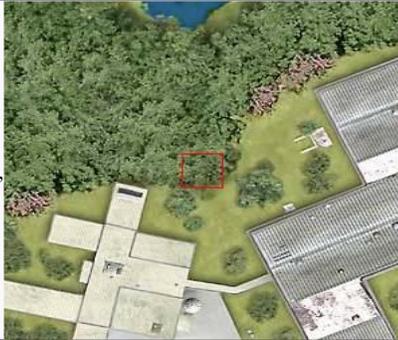


As we go higher with increased dimensions, we begin to see more of that cluster of vegetation. The leaf in the last slide begins to lose its own identity. It is only part of a shrub.

Zoom out higher and higher

10^2
100 m

At this altitude, we see borders of the vegetation and a school



With a slightly higher dimension at 10^2 , (100 m above ground), the landscape is easily visible and the leaf becomes part of the general landscape.

Zoom out higher, higher...

10^3
1 km

We now switch from meter to kilometer

We will probably need parachutes from this altitude...



At 10^3 (1 kilometer up), the overview of the city begins to appear like the view from a plane after takeoff. The leaf in reference is already invisible in the general landscape.

We have changed the units of measurement to accommodate larger objects i.e. buildings and structures. Does that affect our feelings on dimension?

Now state of Florida

10^5
100 km

View of
Florida state
of USA at this
altitude



At this dimension, individual structures are no longer visible.

Satellite view

10^6
1,000 km

This is a
typical satellite
view of the
state of
Florida.



At this dimension, the whole state of Texas and California becomes visible.

Northern and Southern Hemisphere

10^7
10,000 km

Parts of the
Northern and
Southern
Hemisphere

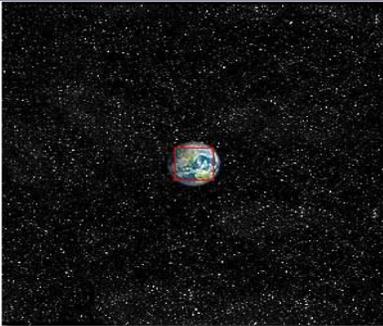


At this dimension, we see our whole planet Earth.

Earth getting smaller

10^8
100,000
km

At this moment, the Earth is getting smaller and smaller...

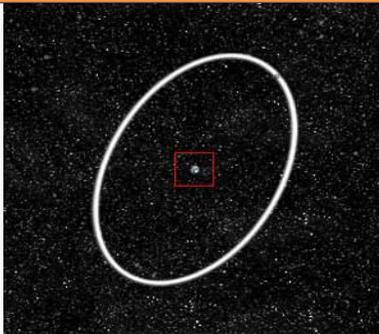


But at this dimension, our earth is so small against the background of a vast space.

Moon's Orbit

10^9
1 million km

Orbit of the Moon around the Earth is represented by the white circle

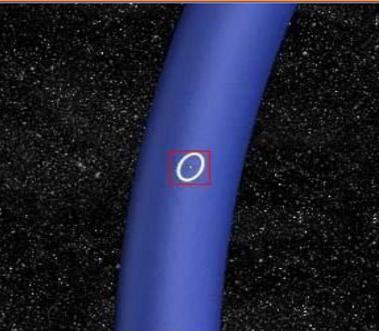


The center of the square is where we begin this journey into space. Our earth is hardly visible.

Earth's Orbit

10^{10}
10 million km

Orbit of the Earth is represented by the blue arc



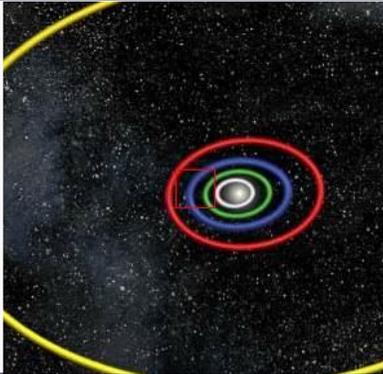
At this dimension, not only is our earth not visible but its orbit of rotation around the Sun becomes obvious

The other Orbits

10^{12}

1 billion km

Mercury, Venus,
Earth and
Jupiter's orbits



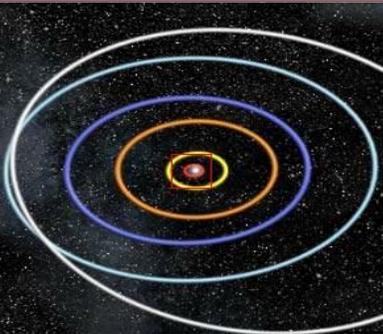
The orbits of other planets around our Sun are represented.

The solar system...

10^{13}

10 billion km

From this
altitude, we
can see the
solar system
and the orbits
of the nine
planets



Our own solar system can be seen in space amongst the other planets.

10 to the power of 14

10^{14}

100 billion
km

The solar
system looks
smaller from
this altitude



Our solar system is now much smaller when compared to the immense outer space.

Solar system looks like a star

10^{15}

100 billion
km

Now, the
solar system
looks just
like one of
the stars



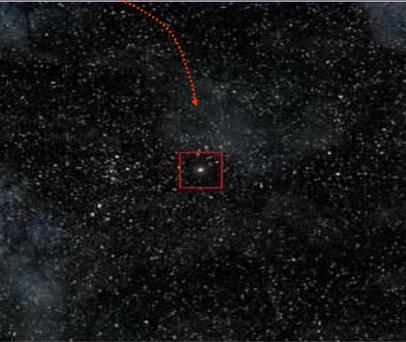
Our entire solar system is so very small that it looks just like a star when viewed from earth.

Solar system hard to see

10^{16}

1 light year

From the
distance of
one light
year, the
solar system
looks very
tiny



Our solar system is only a tiny speck in the universe. Instead of using large numbers, we change the units to reduce its vastness using familiar dimensions. Kilometer has been replaced by “light year”. A time element has been introduced into our measurement of distance.

Solar system not seen

10^{17}

10
light years

From this
infinite,
we cannot
even see the
solar system

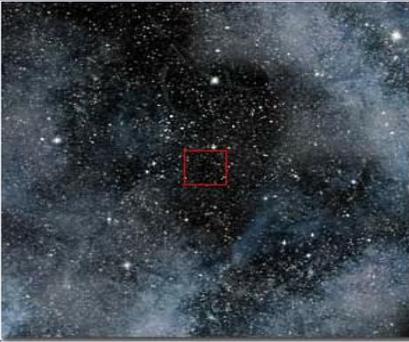


Do our feelings change with the changes in units? Has the object changed? This dimension, our solar system is hardly visible at all. However we know it exists.

Stars and nebula

10^{18}
100
light years

“There is nothing”
all we can see
is stars and
nebula



We are nothing other than being part of the galaxy.

The Milky Way

10^{19}
1,000
light years

At this
distance, we
are now
travelling in
the Milky
Way



Our own Milky Way is in view. Where is our solar system in this vast space?

The Milky Way Tour

10^{20}
10,000
light years

We continue
to tour the
Milky Way



Here we are touring the Milky Way and seeing other galaxies.

Outskirts of Milky Way

10^{21}
100,000
light years

We are now
at the
periphery of
the Milky
Way

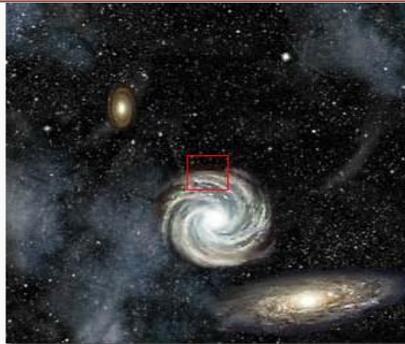


In this view, even the entire Milky Way begins to appear.

Other Galaxies

10^{22}
1 million
light years

From this far
distance, we
can see not
only the milky
way, but also
other galaxies



Our entire galaxy is just an object amongst other galaxies in the universe.

Universe and galaxies

10^{23}
10 million
light years

At this distance, all the galaxies
seem small and far from each
other.

Every part of the universe is
governed by the same physical
laws.

We can continue to travel with
our imaginations, but right
now, let us hurry home



Our galaxy is reduced to a tiny speck in the vast universe.

Have we reached infinite dimension yet? Where is infinity?
Yes, we have reached the “observable” limit of our universe.

Does *a* “limit” exist?

Does “infinity” really exist?

The limit or infinity exists because of the limited scope of our own imagination. The universe is a continuum extending well beyond our mental perception of boundary.

Where is our personal problem in this boundless universe?

Next time, we are back to the ground level of 10^0 and travel inward to atomic levels exploring the microscopic dimensions.