



XR TORUS

XR MEDIA



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THE TORUS

to·rus

noun

1. GEOMETRY

a surface or solid formed by rotating a closed curve, especially a circle, around a line that lies in the same plane but does not intersect it (e.g., like a ring-shaped doughnut).

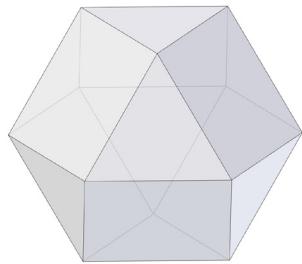
2. ARCHITECTURE

a large convex molding, typically semicircular in cross section, especially as the lowest part of the base of a column.

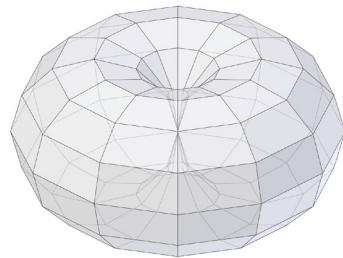
Dynamic Process

Energy Flow

The Torus represents a process. The Vector Equilibrium is the ultimate stillness of energy, whereas the Horn Torus is the embodiment of how energy moves in its most balanced dynamic flow.



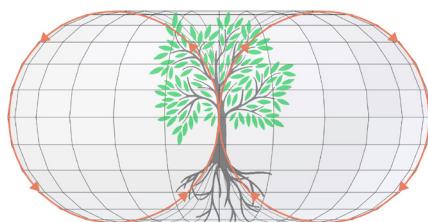
Vector equilibrium



Horn Torus

A torus consists of a central axis, a vortex at both ends, and a surrounding coherent field. Energy flows in one vortex, through the central axis, out the other vortex, and wraps around before returning back through the original vortex.

Plants and trees all exist in this same energy flow process, yet exhibit a wide variety of shapes and sizes. Hurricanes, tornadoes, magnetic fields around planets and stars, and entire galaxies all function in accordance with this system - known as toroidal flow.



In our model of the cosmos, the torus is the fundamental form of balanced energy flow found in sustainable systems of all scales, from the atomic to the galactic. This seamless energy flow is the primary component that allows each living entity to thrive on its own while also existing in unison with all other live organisms. [this needs support from research].

Holomovement

Through this, we notice a seamlessly dynamic exchange of energy and information occurring throughout the universe. It is through this energy flow that we're able to "step down" and "step up" (going from one level to the next as when we climb a flight of stairs) while continuing to exist within this balance. Yet there is only one whole energy flow occurring throughout the entire system. This is what physicist David Bohm calls the Holomovement.

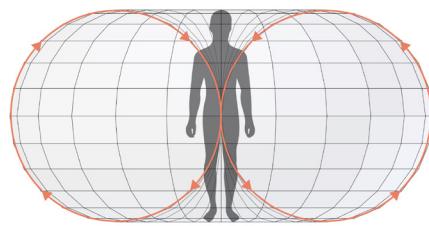
«The new form of insight can perhaps best be called Undivided Wholeness in Flowing Movement. This view implies that flow is, in some sense, prior to that of the ‘things’ that can be seen to form and dissolve in this flow» **Needs to be better understood**

David Joseph Bohm (physicien, philosophe)

Thus, according to Bohm's view, the whole is in continuous flux, and hence is referred to as the Holomovement (movement of the whole)."

Philosophy

It is important to consider what this concept means at the philosophical scale.



“The self in a toroidal Universe can be both separate and connected with everything else.”

Arthur Young (pioneering researcher)



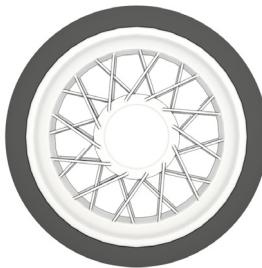
Torus use in XR

Experiencing the Form (using the flow to control)

From outside

When we look at an object, we see it as being a cohesive whole. It is a referential, or an object that we can move to, away from, or around.

From the outside, a torus is a form we experience every day, like a wheel for instance. A wheel is a torus shape that maintains stability as it rotates around the **toroidal** axis.



This is a great example of how form responds to function.

Another example is an elastic wrist band. We are not surprised to see it has the ability to flip over, changing the outward facing side, while staying around our wrist.

So we inherently know these two interactions of the torus, the rotation toroidal (wheel) and the poloidal (elastic). It means we inherently understand the torus flow on a fundamental level. We can even close our eye and imagine a torus rotating around either axis of a given object. It's even possible to imagine rotation around both axis simultaneously.

Given that so few people have had the opportunity to experience a torus first hand, it still may be difficult for some of us to envision.

Relationship between information and the user

How does the user interact fluidly with the torus?

How does the torus appear and disappear ?
How does the information appear ?
From the singularity point ?
From behind the user ?

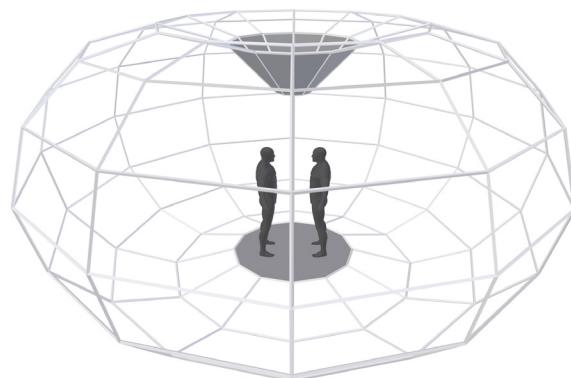
Presence of the information

Info is in the user's head all the time but not in their vision field

Inside VR The Torus may exist as a permanent energy field surrounding the user or it can exist at the discretion of the user, selecting it when they wish and leaving it behind as they chose.

How to share information or interact with others while in the Torus field.

When a user who's inside a Torus meets another user in VR who's also inside a Torus, they may share information more easily.



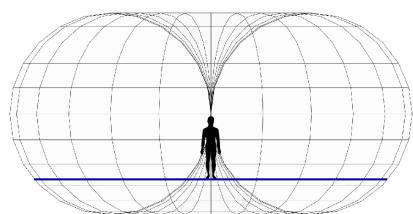


Inside the Torus

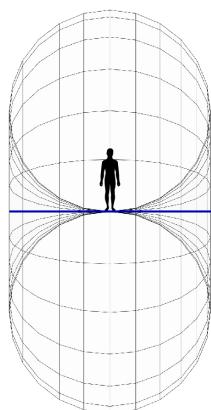
From inside the Torus, everything changes. The user becomes the referential point and everything in the virtual world surrounds them. Although there are many ways a user can experience the Torus, we identified the six most relevant :

User is the center of the flow (singularity point)

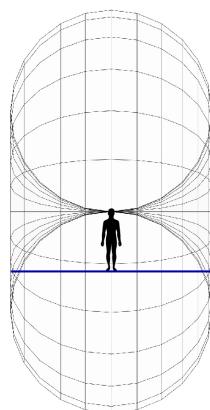
1



2

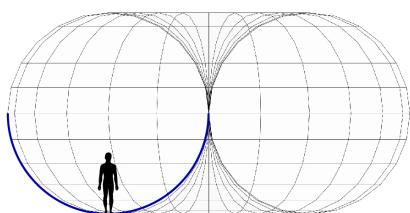


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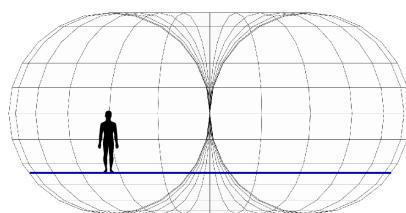


User is surrounded by the flow

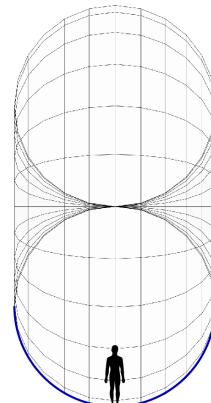
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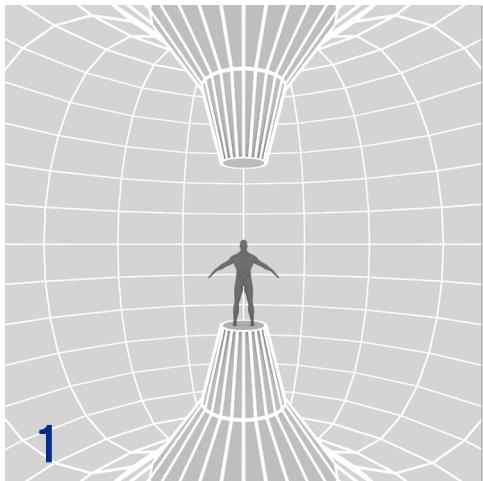


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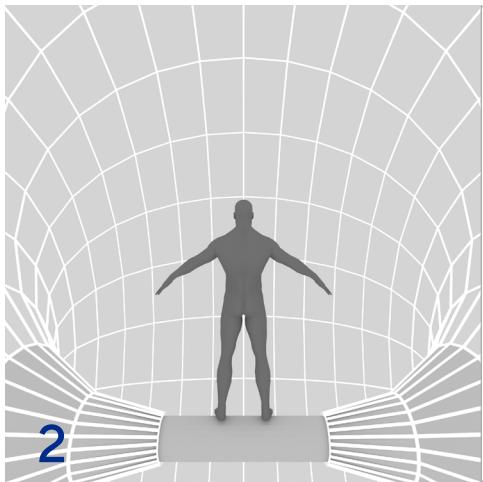


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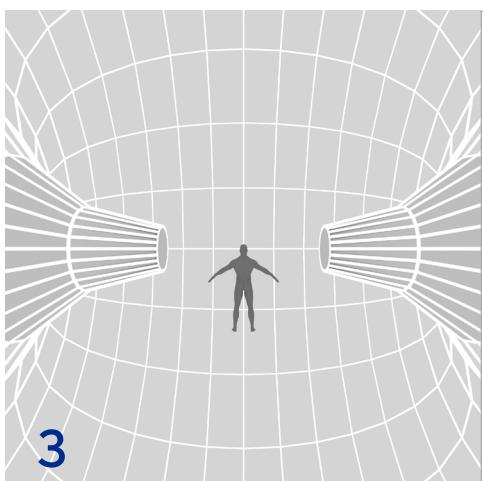




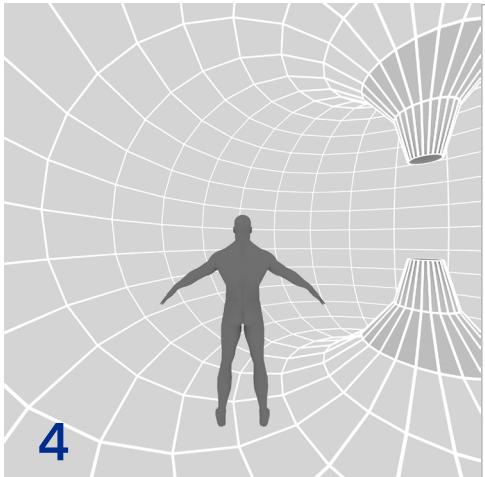
In this instance, the user's eyes are at the singularity point, the center of all information and activity. Any new pieces of information emerge and vanish over his head or under his feet. To control the information you could turn your head left and right to make information come from the left and the right (control of the toroidal flow) And you could also tilt your head up and down and the content will slowly go up and down (control of the poloidal flow.)



In this instance, you are standing on the torus axis. As your feet reside on the singularity point, information comes from under your feet, and you are walking to control the toroidal flow, and looking left and right to experience the poloidal flow.



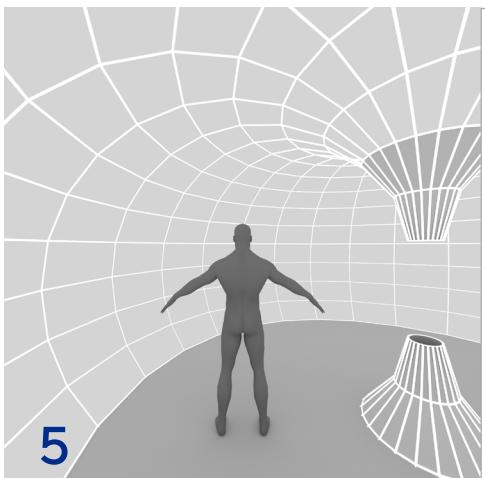
This instance is similar to 2, but the feeling of the torus is different. The flow now comes out of our hands and we're able to use them to dictate the flow of information. Imagine this as though we're actually holding the two horns of the torus.



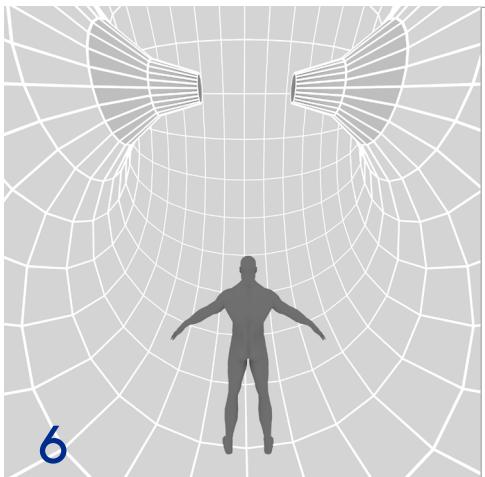
The user can control the flow of information by walking in any direction.

Say the human in this image walks forward and backward to control the toroidal flow and active the poloidal flow with hand gesture.

This creates a different feeling because he is less connected to the information, and we are closer to the architectural design.



This one is a step more towards architectural design. A user would be positioned a bit higher and would now essentially walk in an infinitely curved hallway. It is similar to the 1st because we can access the singularity point to start interactions.



In this case, you are controlling the flow the same way as in number 4. The orientation is different and could evoke a sense of entrapment, which may not make for a user friendly experience.

Find the right way to create a XR Torus

We will have to answer a few questions :

What is the **type** of information? **What does «nature» mean?**

What is the best way to visualize the information? **Explain**

What is the best way to interact with the information?

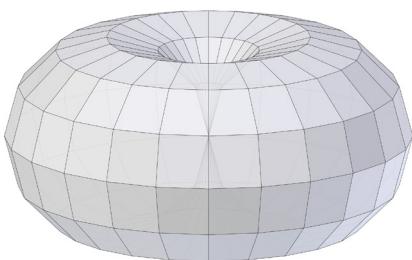
At any moment in the process we have to keep in mind that we want to:

- Guarantee interactivity
- Provide parameters/settings changes
- Guaranty a vision aligned with the torus surface

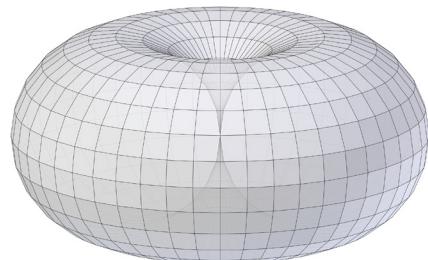
Diferent ways to frame a torus

Regular torus (The two flows of energy are perpendicular)

The segments circling the centerpoint along the toroidal circuit are called minor segments (m) and the segments that circle along the poloidal circuit are called the major segments (M)



$$(m, M) = (12, 24)$$

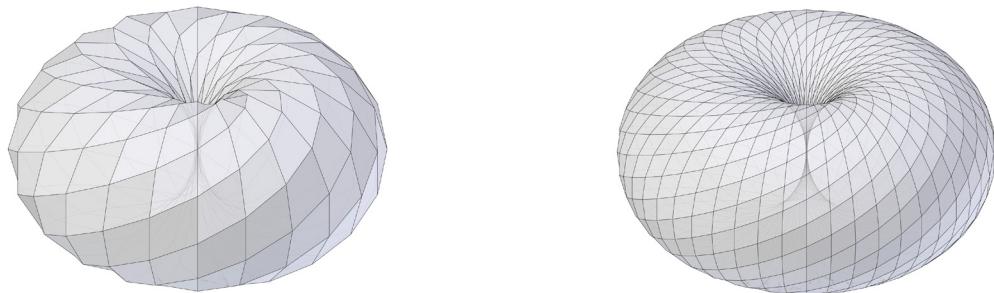


$$(m, M) = (24, 48)$$

What are these numbers representing? The more m and M increase the more the shape is smooth



Flipped torus (adding a toroidal flow too the poloidal flow)



Different way to use the frame

Simply filling the squares (as screen information)

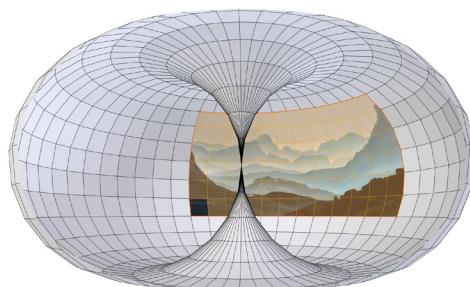
Awesome visuals above. What does «as screen info» mean?

means like computer screen, rectangles

Also, I think it's important to include this type of visual for XR color 2P as well.

Of course bro i will, i already worked on that

The rectangular sections can be modified singularly or be combined to project information at different scales. Why «modified»? more interact with, modify scale, position..



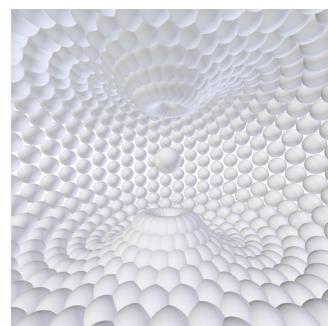
Using the vertices as center point of other objects **Explain the significance or functionality of these objects...**

For example XR color, every vertex could be a sphere, and every sphere a single color related to coordinates

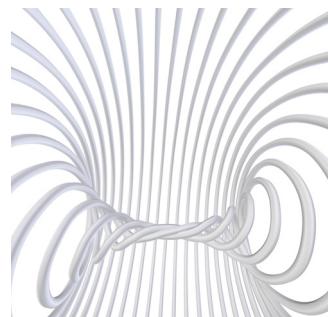
Origami Torus



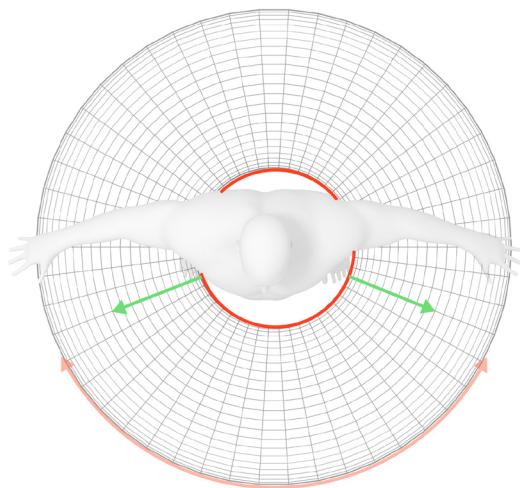
Sphere torus



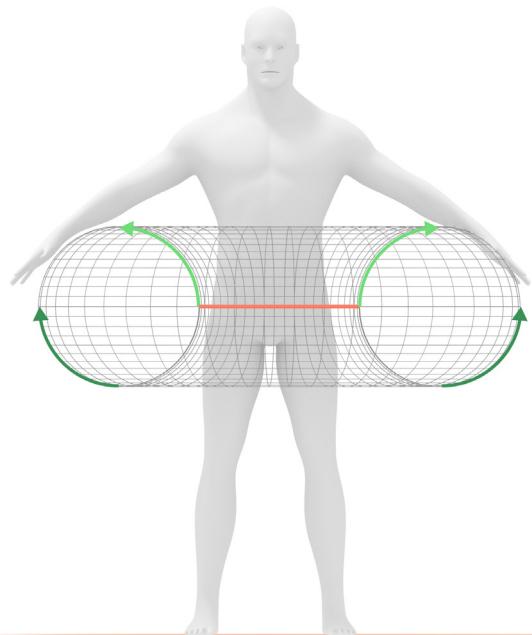
Torus filaire



The Hamp

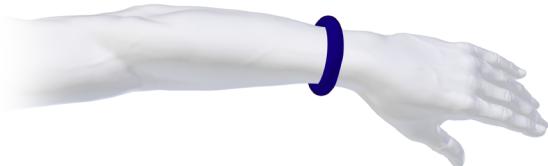


Here is a view above someone inside a tube similar to a Torus. We now know the information and energy can surround this person along two separate planes, circulating around the waist or circulating above the head and below the feet.

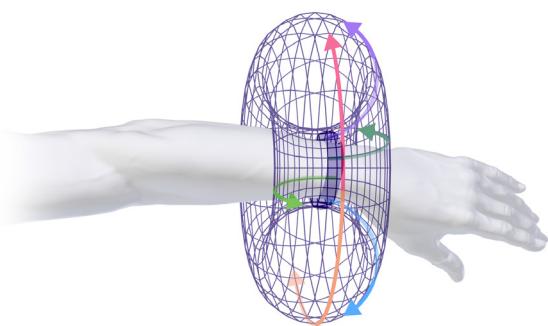


Now, what happens if there is content mapped on the torus. Matching the frame the informations could appear from the red ring (invisible for the user) and either come from inside or outside.

On the Wrist



Let's take a simple look at a bracelet. We know how it can roll on our arm through the dynamic of the poloidal flow and also around itself through the toroidal flow.



Here we see how it can be virtually scaled and how we start to really visualize the two dynamics.

«What if the faces **display** content? **What is meant by «turn»?**

**What ways would the flow be significant?
How would you interact with it?»**

Let's assume the easiest way to interact with the Torus is by twisting your wrist left and right to control the toroidal flow (red/orange) and that articulating your hand controls the poloidal flow (light green, dark green, blue and purple)

Hand Action	Rotate left	Rotate right	Flex down	Flex up	Flex left	Flex right
Torus reaction	Toroidal Flow		Poloidal Flow			
Arrows	→	→	→	→	→	→
Results	Action A	Action -A	Action B	Action -B	Action C	Action -C
Driving	Turn left	Turn Right	Slow down	Accelerate	Lights on?	Lights off?



Centered By Stillness

One of the key characteristics of the torus is that at its exact center, the entire system is at a point of ultimate balance and stillness. Like the center point of the vector equilibrium (VE), this is the center point - point of "singularity" - within the torus.

In the VE, it's the center of the system in its state of unmanifest perfect equilibrium.
In the torus, it's the center of the system in its state of manifest flow process.

As in the case of blackhole singularity at the center of galaxies, this center point within all systems connects the system continuously with the underlying Unified Field (energy and information return to the zero-point source - state of infinite density via a singularity).

In this way, everything is unified and holographically present as the Unified Field informs every manifest entity of the entirety of the cosmos in every moment, and every entity informs the entire cosmos of its localized presence via the Unified Field. **Let's clearly define «Unified Field» the individual is connected to the global and the reverse**

This kind of reciprocal exchange is a primary feature of toroidal systems, wherein the individual is informed and influenced by its surrounding environment, and the surrounding environment is informed and influenced by the individual, in a continuous balanced rhythmic interchange.

«...a reciprocal relationship enables a qualitative relation between structure and background, in which each has the potential not only to «impact» the other but to generate transformations in the nature of what each actually is... More broadly considered, the notion of reciprocal relation allows for nested, mutual influence even between macroscopic processes and those at the atomic level, indicating the complexity of the pathways through which the qualitative infinity of nature may manifest.»

From The Essential David Bohm, edited by Lee Nichol

Features and Principles of Healthy Living Systems

The torus, as a flow process, exhibits [where and how does it exhibit these systems] a set of characteristics that evolutionary biologist Elisabet Sahtouris has identified as **features and [delete]** principles of healthy living systems. Through her study of these systems, she has observed that when these features are present, the system is balanced and whole. When these features become compromised or absent, the system goes out of balance and becomes dysfunctional and corrupted to the point that it will either collapse completely, transform into a new balanced state, or restore its balance again by restoring the appropriate presence and functioning of these features.

The features of healthy living systems that Sahtouris identified are:

- Self-creation
- Complexity (diversity of parts)
- Embeddedness in larger holons and dependence on them
- Self-reflexivity (self-knowledge)
- Self-regulation
- Response-ability to internal and external stress or other change
- Input, output exchange of matter, energy and information with other holons
- Transformation of matter, energy, information
- Empowerment, employment of all component parts
- Communications among all parts
- Coordination of parts and functions
- Balance of Interests negotiated among parts, whole, and embedding holarchy
- Reciprocity of parts in mutual contribution and assistance
- Efficiency balanced by Resilience
- Conservation of what works well
- Creative change of what does not work well

These terms above need defining

not really necessary as if you understand half of them you still get the concept ;)

Resonance, Energy, and Consciousness

«All things, material and spiritual, originate from one source and are related as if they were one family. The past, present, and future are all contained in the life force. The universe emerged and developed from one source, and we evolved through the optimal process of unification and harmonization.»

Morihei Ueshiba, The Art of Peace



Short Background

Geometry

[Geometry was defined on opening page of document yet not mentioned again until 2nd to last] Yes it is for developers

A torus can be defined parametrically by :

$$x(a,b) = (R+r \cos a) \cos b$$

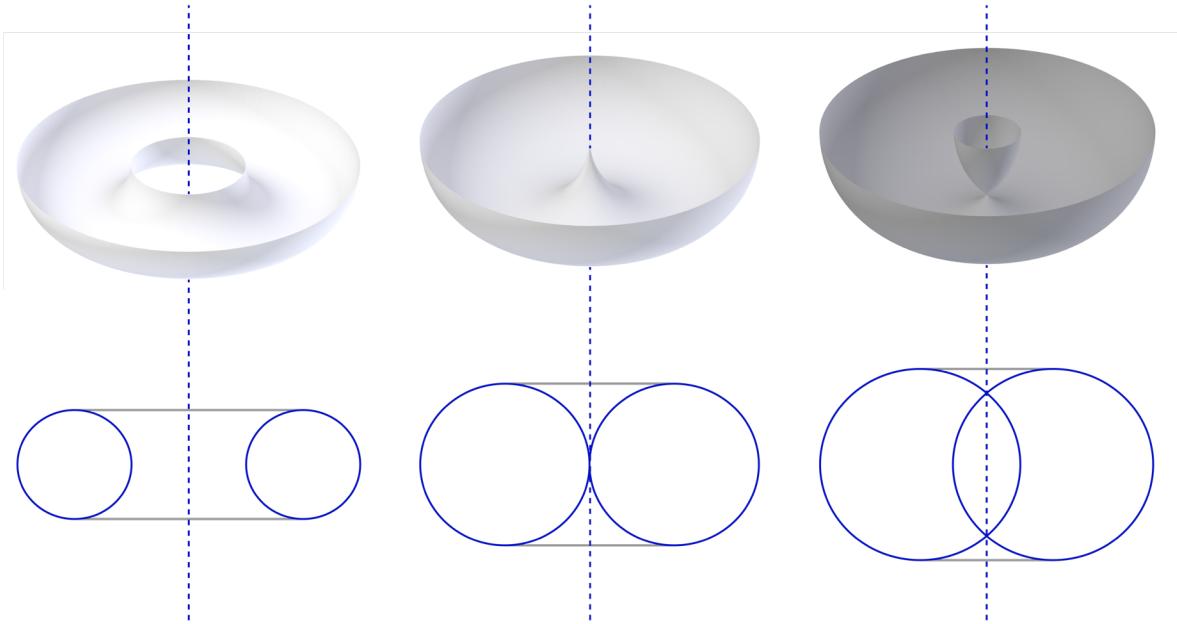
$$y(a,b) = (R+r \cos a) \sin b$$

$$hz(a,b) = r \times \sin a$$

where :

- (a) and (b) are angles which make a full circle, so that their values start and end at the same point,
- (R) is the distance from the center of the tube to the center of the torus,
- (r) is the radius of the tube.

(R) is known as the «major radius» and r is known as the «minor radius». The ratio (R) divided by (r) is known as the «aspect ratio» [label below images to correspond with variables mentioned above]

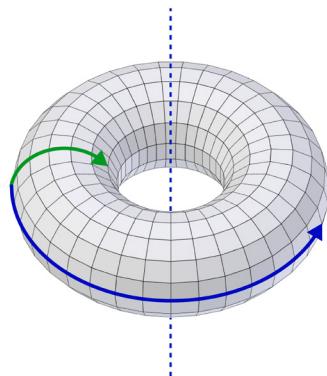


Ring torus : $R > r$

Horn torus : $R = r$

Spindle Torus : $R < r$

A diagram depicting : the poloidal (a) direction, represented by the green arrow, the toroidal (b) direction, represented by the blue arrow.



In traditional spherical coordinates there are three measures, (R), the distance from the center of the coordinate system, and (a) and (b), angles measured from the center point.

As a torus has, effectively, two center points, the center points of the angles are moved; measures the same angle as it does in the spherical system, but is known as the «toroidal» direction. The center point of r is moved to the center of r and is known as the «poloidal» direction.

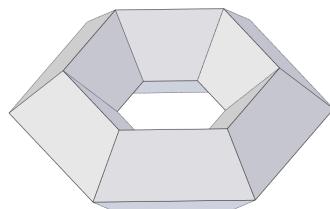
Toroidal polyhedra :

They have Euler characteristic $V - E + F = 0$.

For any number holes, the formula generalizes to $V - E + F = 2 - 2N$, where N is the number of holes.

The term «toroidal polyhedron» is also used for higher-genus polyhedra and for immersions of toroidal polyhedra.

V (Vertex)
E (Edges)
F (Faces)







XR TORUS

