

## THEORY OF UNIFIED MATTER

(Cosmology, astrophysics, physics, 8 pp.)

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### Significance

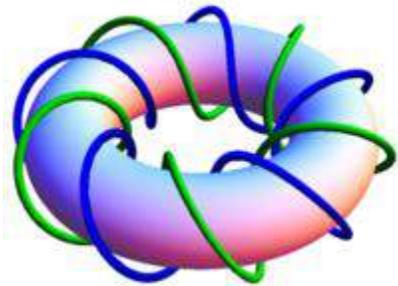
This article portrays space and time as conformal projections of motion, and reveals the co-relation between the universality of spacetime (relativistic model) and energy-frequency (quantum model). This new theory of astrophysics proves that **unified matter of coupled superstrings** created a **supercavity** previously thought to be a black hole, thus negating the assumption of a gravitational collapse of a star to form a black hole. In general, there is no cosmic hole in the fabric of space where the **macroscale density of space** and not the microscale density of matter should be examined. What was previously conceived as a “black hole” is a **self-gravitating tori disc** – a **cosmic supercollider of doubly elliptic strings manifold**, and this explains the origin of relativistic jets from magnetized accretion disks, as elaborated in this article.

In re: the California Institute of Technology in the US came up with a physical model that could explain the existence of the asymmetry in terms of a very large-scale variation in the **density of the universe** that is observable on a particular distance scale – one which is slightly larger than the size of the observable universe. Accordingly, this article contributes to the understanding of the formation of **twin self-gravitating accretion discs** by **twin superstrings** in gauge/gravity duality, where at  $D = 26$  the string dynamics is that of harmonic oscillators, as was predicted earlier by dual theorists. Hence, our new cosmic model is in conformity with the basic principle of duality in nature, where no singular event of the alleged “Big Bang” could have taken place, for there must always be the cause and the effect in a dual interaction, as in the wave-particle duality.

### The Theory

Two parallel lines never meet in geometry, but superstrings of matter in cosmos might couple and converge in a bow-like superstructure with a shock wave, as in **fig. 4** and ref. 2 far below. Compare: on earth a pair of lines of longitude is parallel at the equator but converge toward the poles. So, let’s consider two parallel superstrings of matter with integrated accretion discs in the middle of each one. (Fig.4 far below). Those discs are formed by two **coupled linear superstrings** of matter, whose shared central core inflates to create an accretion disc (fig. 1) in super-Planckian effect (fig 2.): in superstrings induced large extra dimensions the coupling constant in gravitational field is about one TeV where super-Planckian collisions take place.

**Fig. 1. Coupled superstrings**



**Fig. 2. Accretion disc of coupled superstrings**

The accretion disc of matter in fig. 1 and 2 consists of **nuclei** (see ref. 3 at the end of this article) and membrane that oscillate in unison in **unified resonant frequency** in a given frame of spacetime, which is not trapped in geometrical dimensions, but oscillates/modulates in different atomic frequencies we cannot perceive or detect, for we're not yet "tuned" to them, as a common radio cannot pick up radio waves it is not tuned to. Therefore, our superstrings model and concept differ from the string theory model, which envisages a structure of different integrated, not unified and inharmonic shapes, which cannot co-vibrate in common pitch. (For **pitch** see ref. 3 at the end of this paper)

In our opinion, a cosmic superstring resembles a hexagonal musical string which has "core" of one material, with encircled by other materials. A musical string is linearly stretched along the fingerboard of a musical instrument, where the fingers of the musician press/short them in different intervals, while the bow pulls the string sideways to make it vibrate in various sounds. Similarly in cosmos, a superstring of matter stretches itself linearly in space, where applied gravity presses/shorts it in spacetime intervals/knots of matter and then pulls it sideways to make it resonate/oscillate in various frequencies and gravitational waves which create a supercavitation (not a black hole) in space caused by the density of coupled superstrings, as in fig. 1.

Accordingly, our superstring is not a macrojet of matter but a chain of intertwined gauge/gravity microstrings- cosmic tubes that funnel the invisible superfluid dark matter (as **continuum fluid in the phase space**) and highly compressed energy in thereby twisted spacetime (Fig. 3 a, b), which **expands and contracts** in pulsation due to inherent gravity and fluorescent mirror reflections of subatomic particles.



**Fig. 3, a.b. Chains of microstrings in twisted timespace.** Time and space, according to Einstein's theories of relativity, are woven together). Our concept image of intertwined/woven superstring fabric as in fig. 3 has its further confirmation in **ref. 4** below.

So in our unified model, coupled superstrings unify in space via supercore (fig. 1) of the overlapping, oscillating condensed matter (fig. 2), which creates in supercavitation a superdensity vortex, previously termed the black hole that had puzzled scientists who couldn't comprehend how matter spiraling around a black hole in an **accretion disk** suddenly plunges into the void without gravitational collapse.

*Nota bene:* the intertwined superstrings in fig. 3 have open opposite ends through which matter traverses spacetime in superconductivity contrary to the speed of light constant, for said superstrings acts as a supercollider and superaccelerator in space. The inherent shape of our superstrings with integrated succession of multiple micro-barriers in supercold **vacuum chambers** explain the phenomena of neutrinos, which propagate unobstructed through space and earth, originate in one part of the universe and immediately appear in a remote part by piercing the spacetime. For **neutrinos** the **spin** is always **opposite** the linear momentum, so in our superstring accelerator we might deal with the Casimir effect and particles that emit the virtual photons which lose momentum **p** in the recoil, and the other particles get the momentum.

Vacuum neutrino oscillations are possible in relativistic wave packets per quantum field theory. Neutrino is considered as wave packets either in QM or in QFT. QM postulates the wave function of neutrino and this is the source of numerous paradoxes. Standard S-matrix theory of QFT works with states of definite momentum -- neutrinos uniformly distributed over all space in the propagation momentum in **phase optimization** per Wave Field Theory. The neutrino state is a superposition of massive **neutrino** wave packets determined by the production process where the energies and momenta of the massive neutrino components relevant for neutrino oscillations are in general different from the average energies and momenta of the propagating massive neutrino wave packets, as in our model of the **cosmic neutrinos accelerator**. (See C. Giunti, Neutrino Wave Packets in Quantum Field Theory, 2002. D. V. Naumov and V. A. Naumov, Vacuum neutrino oscillations with relativistic wave packets in quantum field theory. J. Phys. G 37 (2010) 105014, Dmitry V.Naumov, 2011).

In re: “Physicists may have linked the elusive source for the **highest energy neutrinos**, abundant sub-atomic particles with no electrical charge that race through the universe, to a **black hole** -- the supermassive black hole at the center of the Milky Way galaxy called Sagittarius A”. Observations leading to a potential breakthrough in the identification of a source were made with three NASA space telescopes, the 15-year-old Chandra X-ray Observatory, 10-year-old Swift Gamma Ray Burst mission observatory and the 2-year-old NuSTAR (an X-ray observatory), as well as the IceCube Neutrino Observatory, which is positioned under the South Pole. IceCube has recorded 36 high-energy neutrinos since the facility became operational in 2010. “We now have the first evidence that an astronomical source, the Milky Way’s supermassive black hole may be producing these very energetic neutrinos,” states University of Wisconsin physicist Yang Bai, in a Nov. 13 NASA announcement. He is among a half dozen scientists from the universities of Wisconsin and Hawaii who published their findings in Physical Review D.”

The idea is that albeit a neutrino has no single mass, by passing through each termonuclear combustion **chamber** in our superstring, a swarm/block of neutrinos **accelerates in jets** (see ref. 3 at the end of this article) with each fusion cycle and accumulates enormous cumulative energy to warp the spacetime where the entry point is the instant exit point for neutrinos in any part of the universe. Hence, the universe might have been built by such blocks of primordial matter to then evolve into current universe per my **theory of twin (non-parallel) universes**.

We can accordingly claim that the **condensed water** is the end product of fusion in cosmic accelerator described above, i.e., when the positron passes through a cloud chamber it simply doesn’t have enough time around any particular electron. What it does do, however, is to ionize some of the atoms which, in turn, allows the super saturated water vapor to condense along the path in our twin superstrings-twin black holes integrated system in fig. 4. For water matter see ref. 5, p.7. of this paper.

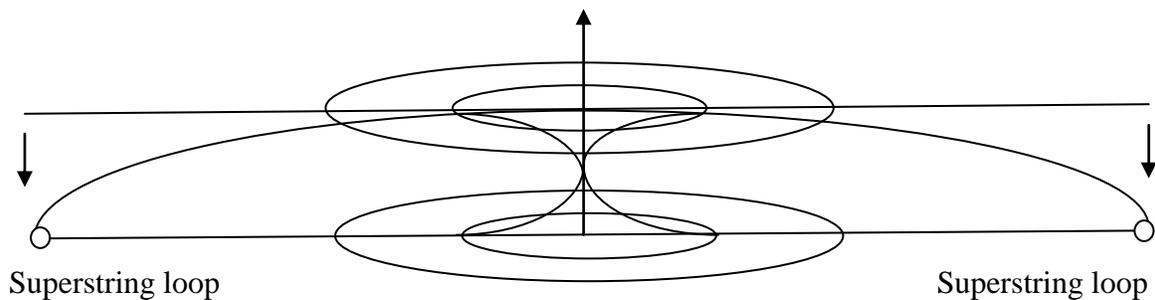
2. With regard to the **unified matter**, as depicted in fig.4, the ends of the upper string of matter are gravitationally pulled/shifted (for **shift** see ref. 3) sideways downward the corresponding ends of the base string of matter, creating thereby a **bow of matter** (fig. 4 and ref. 2 below) with the jet arrow of matter emitted along the axis of rotation from the base disc via the upper disc over its event horizon, as in fig. 4. So in our bow of matter we deal with the induced curvature of space per theory of general relativity, which predicted that a sufficiently compact mass can deform spacetime.

Large vertical “**arrow**” in our model represents a relativistic jet of matter which is forced from the twin superstrings structure due to accumulated tension applied by the bow of matter and rotational acceleration around the axis of the disc core. A similar phenomenon occurs on earth, where the jets of magma erupt from volcanoes due to accumulated internal pressure and earth’ occasional acceleration around its axis which might had caused in the past the death of the dinosaurs, whose skeleton couldn’t sustain their enormous weight in increased gravity. The 2009 experiments conducted by Professor

Sergey Lebedev's team in the Department of Physics at Imperial College London ([www.imperial.ac.uk](http://www.imperial.ac.uk)) confirm our theory by suggesting that the jets of matter are fired out more like bullets or buckshot, "they don't break into pieces—they are formed in pieces."

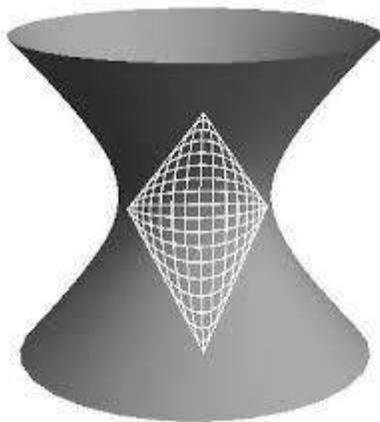
Note that our jet-arrow of matter points in one forward direction and isn't emitted in the opposite direction as suggested by the astronomers in ref. 3 far below. In fact the info in ref. 3 confirms our twin accretion disks concept as shown in **fig. 4** below, where the jet of matter from invisible lower disc is emitted via upper visible twin, in accordance with the **constant of duality** in the nature and cosmos. (Compare with twin galaxies or single ones after separation).

The discussed in fig 4 below **bow of matter** has its reflection in a bow-like shock wave in cosmos in NASA image (see photo in ref. 3 in the end of this paper).

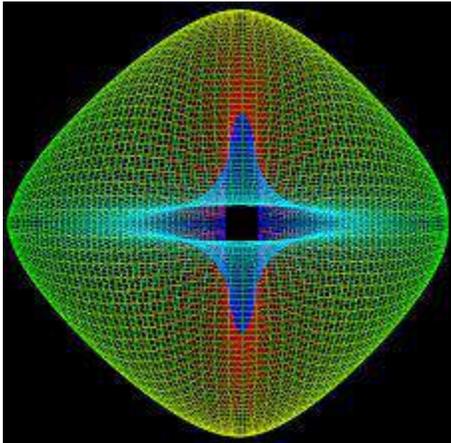


**Fig. 4. Bow of Matter**

This twin superstrings model with twin accretion discs is created by **doubly elliptic strings** (fig. 5 below) and functions as a **toroidal "saddle" space** (fig. 6) and a **dynamic horn torus** with a uniform grid (fig. 7), where matter from the upper accretion disk in our model is forced downward to the lower accretion disk by the Coriolis force, to then erupt upward in a jet via upper disk due to accumulated density, energy and pressure.

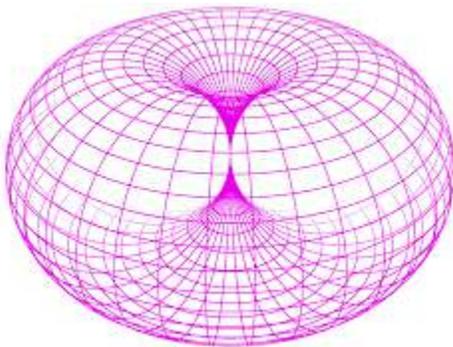


**Fig. 5. Doubly elliptic strings**



**Fig. 6. Toroidal saddle space, integrating a self-gravitating torus disc previously mistaken for a “black hole.”**

The geometry of the universe is "open" or negatively curved like a saddle, according to a new model proposed by researchers in Europe who have studied anomalies in the cosmic microwave background radiation. The anomalies were first detected by NASA's Wilkinson Microwave Anisotropy Probe (WMAP) in 2004 and were confirmed earlier this year by the European Space Agency's Planck space mission.



**Fig. 7. Dynamic horn torus.**

This toroidal shape has no central "hole", but folds in upon itself and all points along its surface converge into a zero-dimensional point at the center called the vertex, which acts as a particles trap where particles collide and interact.

One might ask how the gravitational pull was created in the parallel superstrings of matter in our model (fig. 4), with no external force. The answer is that we deal here with the warps of matter as the set of lengthwise streams of particles held in opposing tension in said strings and **twisting** around those strings of matter, as a certain metal encapsulates a violin string in a spiral. Our warp concept is supported by a practical

experiment conducted by Professor Sergey Lebedev's team in the Department of Physics at Imperial College London that sent a high-powered pulse of energy into an aluminum disk. In less than a few billions of a second, the aluminum began to evaporate, creating a cloud of plasma very similar to the plasma cloud surrounding a young star. Where the energy flowed into the center of the disk, the aluminum eroded completely, creating a hole through which a magnetic field from beneath the disk could penetrate. The field initially pushes aside the plasma, forming a bubble within it. As the field penetrates further and the bubble grows, however, the magnetic fields begin to **warp and twist, creating a knot in the jet.**

To discuss further our superstrings of matter, we come to the notion of **repellent gravity**, as observed in galaxies. Due to anti-gravity between two superstrings of matter in our model, matter **shifts toward the density points/loops at the end of unified strings.** (For **shifting** see ref. 3 below). This corresponds with Max Planck's idea of a harmonic oscillator (classically, anything that wiggles like a mass bobbing on the end of an ideal spring). Hence, our superstrings are “**plugged**” at their low density vertex representing a **plasma conductor in a vacuum loop**, which can withstand large gravitational pull. Dynamics of plasmas are often the sources of electromagnetic fields. ((Loop quantum gravity and **Aharonov–Bohm effect** might be applicable). This corresponds also with the **superfluid vacuum theory (SVT).**

Moreover, our bow-like superstrings model provides a “quantum bridge” between contracting and expanding matter where the fragmentation of horizon crossing superstrings creates loops that accrete and bind to collapsing matter perturbations, since the string tension is less than a critical value and the loops are large-scale.

### Ref. 1

#### **Twin Black Holes Discovered**

Posted October 3rd, 2012

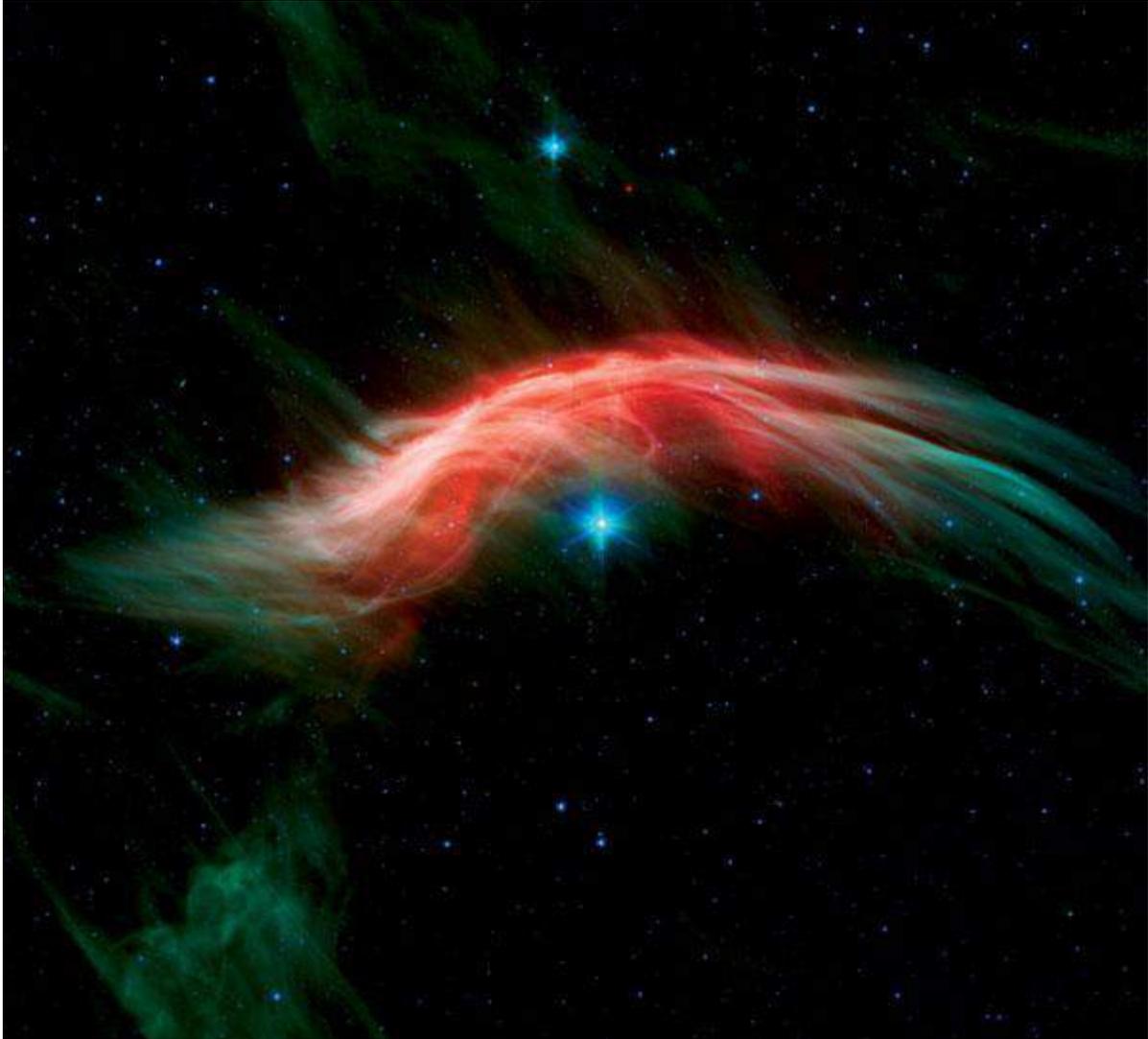
Astronomers recently made a surprising find while searching for a unique black hole in a tight cluster of stars 10,000 light years away from Earth. Instead of finding one black hole, scientists with the National Radio Astronomy Observatory (NRAO) found two – twins – something that surprised them because, according to modern theory, there should only be one black hole in a cluster.

### Ref: 2 below

#### **Supernova-powered bow shock creates cosmic spectacle**

12:31 21 January 2013

Picture of the DaySpace *Victoria Jaggard, space and physical sciences news editor*



*(Image: NASA/JPL-Caltech)*

### **Ref. 3 below**

2013: Using the European Space Agency's (ESA) [XMM-Newton](#) observatory, lead author [Dr. María Díaz Trigo](#) and colleagues studied a black hole binary system located in our own galaxy. This system, called 4U1630–47, has been known to show X-ray outbursts over the period of several months or even years, the agency explained in a statement. “In our observations, we found signs of highly ionized nuclei of two heavy elements, iron and nickel,” said Trigo, who works at the European Southern Observatory in Munich, Germany. “The discovery came as a surprise – and a good one, since it shows beyond doubt that the composition of black hole jets is much richer than just electrons.”

“Intriguingly, we found the lines were not where they should be, but rather were shifted significantly,” said [Dr. James Miller-Jones](#), who led the radio observations and is a

member of the International Centre for Radio Astronomy Research (ICRAR). That shift was similar to that of the pitch change of a vehicle's siren as it moves towards or away from the hearer, and signified that the length of the sound wave is becoming shorter or longer due to the movement. The phenomenon led the study authors to believe that the particles were being accelerated to high speeds while in the jets – one towards the Earth, and the other in the opposite direction. According to Dr. Miller-Jones, this is the first strong evidence of the presence of such particles in typical black hole jets. “We’ve known for a long time that jets contain electrons, but haven’t got an overall negative charge, so there must be something positively charged in them too,” he explained.

“Until now it wasn’t clear whether the positive charge came from positrons, the antimatter ‘opposite’ of electrons, or positively charged atoms,” the Dr. Miller-Jones added. “Since our results found nickel and iron in these jets, we now know ordinary matter must be providing the positive charge.”

Read more at <http://www.redorbit.com/news/space/1113003040/black-hole-jet-contents-111413/#i7XX4sDVdvHdPqrQ.99>

**Ref. 4 below**

**Monster black hole from early cosmos challenges physics**

Thursday, 26 February 2015 Genelle Weule and Stuart Gary, ABC



New physics are needed to explain an ancient supermassive black hole quasar 12 billion times the mass of the Sun (NASA/Caltech). Super big discovery **The discovery of a supermassive black hole from the early cosmos is set to rewrite physics, say scientists.**

An international team of astronomers detected a black hole 12 billion times the mass of our Sun, they report today in the journal [Nature](#). The black hole, which formed just 900 million years after the Big Bang, is the source of a powerful beam of bright material known as a quasar.

"When we found this supermassive black hole we got very excited because we had found something that we never thought we could find," says Dr Fuyan Bian of the [Australian National University](#). The team, led by Xue-Bing Wu at Peking University, discovered the black hole and quasar -- known as SDSS JO100+2802 -- using the Sloan Digital Sky Survey, then followed up with three other telescopes. With a luminosity of 420 trillion that of our Sun's, the new quasar is seven times brighter than the most distant quasar known.

"This quasar is very unique. Just like the brightest lighthouse in the distant universe, its glowing light will help us probe more about the early Universe," says Wu.

**Ref. 5**

Researchers found a lake of water in a cloud around a huge black hole. The official NASA news release describes the amount of water as "140 trillion times all the water in the world's oceans.