

Scientist predicts Japan, the 'land of the rising sun', will soon become the 'rising sun' in X-ray astronomy

Japan's X-ray telescope (XRISM) might revolutionize X-ray astronomy and our understanding of celestial X-ray sources.

INDORE, MADHYA PRADESH, INDIA, August 31, 2023 /EINPresswire.com/ -- Japan is soon about to launch the [X-ray telescope XRISM](#) to investigate celestial X-ray sources in the Universe. The mission will focus on lower-energy, 'soft' X-rays, and in particular on the calorimeter, which was the feature that the international astronomy community needed most urgently. XRISM's capabilities will be unique until European Space Agency (ESA) launches its Athena space observatory-carrying a more sophisticated version of the calorimeter-in 2035. The latest updates can be followed on [XRISM telescope news](#). Speaking about the immense significance of the JAXA (Japan) and NASA collaborative project XRISM mission, Mr. [Subhajit Waugh](#), a scientist (physicist) working in RRCAT (Raja Ramanna Centre for Advanced Technology) has confidently predicted that XRISM will shock the astronomical community. It will confirm what its predecessor, Hitomi X-ray telescope (ASTRO-H) observed: the gas velocities in the X-ray emitting plasmas in the intergalactic medium are much lower than expected. XRISM data will completely debunk the shock-wave heating or ram pressure heating mechanisms of inter-galactic gases (which is the prevalent view). It will also find the gas velocity in the bullet cluster (1E 0657-56) is too low to maintain a sustained temperature ranging from 70 to 100 million Kelvins. Scientists will struggle to understand



The Bullet Cluster will prove to be a bullet in the chest of Dark Matter (Pink shows X-ray emitting plasma, while blue shows mass distribution)

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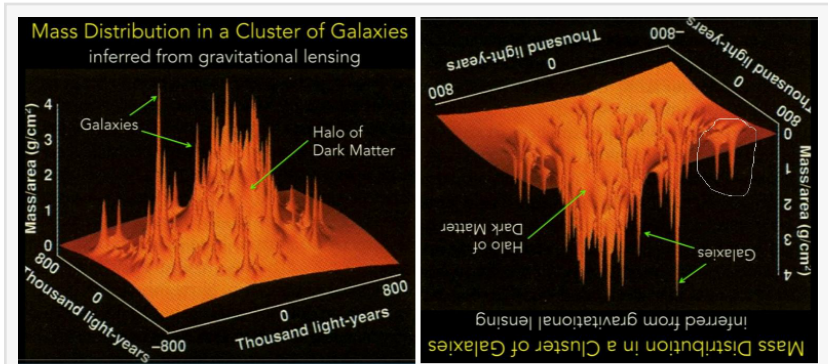
You cannot run the 'Tokaido Shinkansen' bullet train on tracks built for steam locomotives. Similarly, you cannot run modern science on a century-old concept of SpaceTime.”

Subhajit Waugh

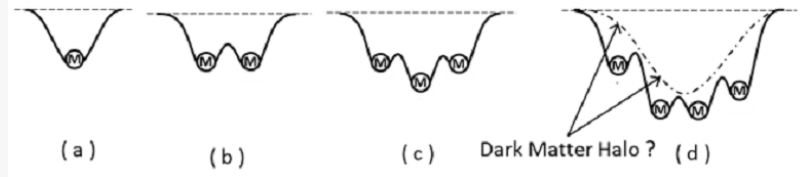
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how energy is getting transferred from the core of stars (which are nuclear fusion reactors) to vastly distant, rarefied gases in deep space.

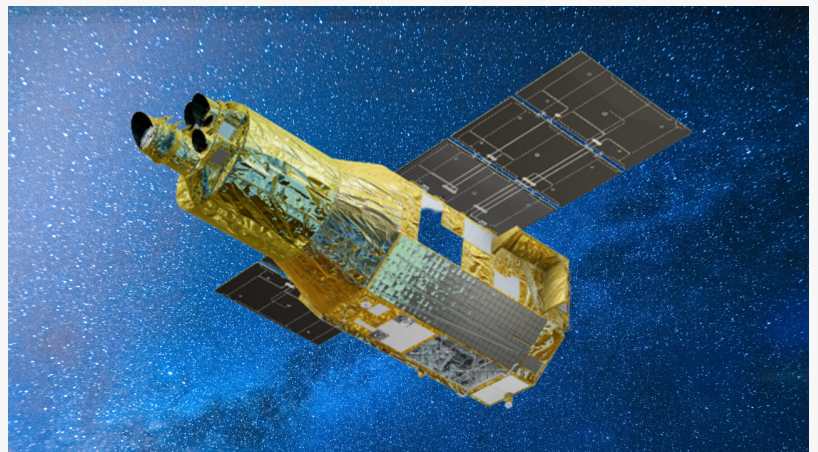
Comparing the Bullet Cluster data from other telescopes, XRISM will confirm that the Intracluster Medium (ICM) weighs only a negligible portion of the total mass of the galaxy cluster. This will be a shocking departure from the present belief that roughly 10 percent of a galaxy cluster's mass resides in the ICM, while the stars and galaxies contribute only 1 percent to the total mass (the rest whooping majority of the mass is presently believed to be Dark Matter). The claim that the mass of X-ray generating intergalactic plasma is negligible, is already evident from the gravitational lensing data: the lensing mass is almost coincident with the visible galaxies in the Bullet cluster. The ICM which is presently believed to carry the entire Baryonic Mass, hardly shows its presence in gravitational lensing! Unfortunately, the presence of almost all the mass in the visible galaxies is wrongly attributed to Dark Matter. Scientific community should follow Sherlock Holmes' advice and adjust their theory according to evidence, and not the other way round. The tightest correlation of Dark Matter to the visible Baryonic matter (which Euclid telescope, the contemporary of XRISM, will prove again and again) actually strongly disfavors Dark Matter, and questions its need. Mr. Subhajt Waugh has shown that our present understanding of the concept of SpaceTime is wrong (Ref. 1), and Dark Matter is merely a relic of our misunderstanding of General Relativity. He asserts that Dark Matter is not required (Ref. 2 and 3). With upcoming data



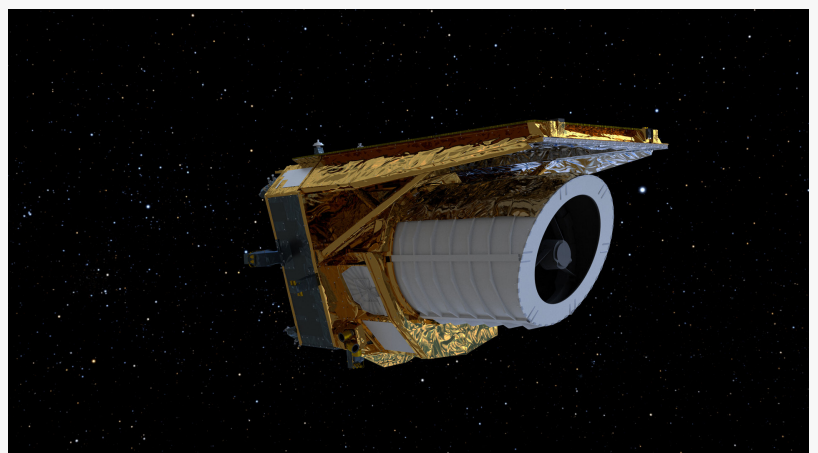
[Image source] Galaxy Clusters: Well of darkness; August E. Evrard, *NATURE*, VOL 394, 9 JULY 1998]



Rubber Membrane Model for Dark Matter Halo



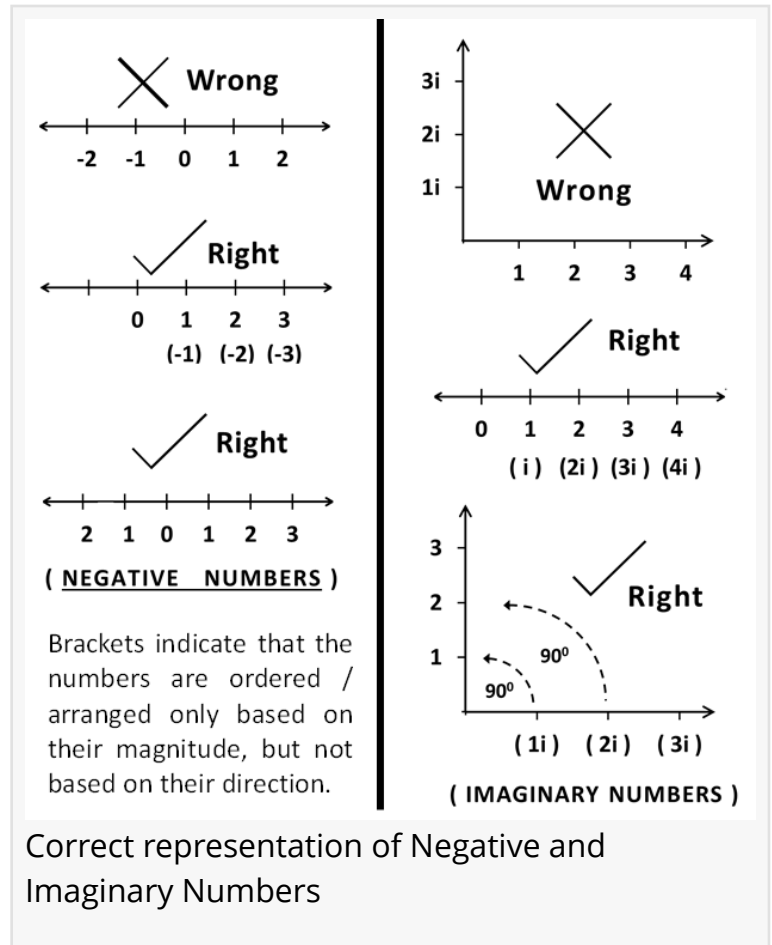
XRISM X-Ray Telescope



Europe's Euclid telescope, the contemporary of Japanese XRISM telescope.

from XRISM, the Bullet Cluster will prove to be a bullet in the chest of Dark Matter. The mass of galaxy cluster is concentrated in the galaxies, and the mass of galaxies are concentrated in the stars.

The space between galaxies is emptier than the best vacuum humans can make in the lab. The average density of the intergalactic medium (IGM) is about one atom per cubic meter: less than a billionth of a billionth of the density of air on Earth (which also means that the IGM would not weigh 10 times the mass of the galaxies themselves). Despite that, the temperature of IGM is millions of degrees. Gas this hot produces X-rays. But what is heating the plasma to such incredibly high temperatures? Shock heating or ram pressure heating are not good options to consider. Besides, the hotter a body, the faster it cools (the rate of cooling of a body is directly proportional to the temperature difference between the body and the surrounding. For higher temperature difference, the cooling rate becomes even more severe). And in the freezing environment of deep space, maintaining a temperature of tens or even hundreds of millions of degrees is not a matter of joke. Scientists have realized the practical difficulty in maintaining millions of degrees while working with magnetically confined plasma in tokamaks (especially if there is any slightest contamination of heavier elements). Scientists have even joked that they can apply for a patent for rapid cooling of fusion plasma. In IGM, there is lots of contamination of heavier metals (which is referred as metallicity). In addition, the gas density in IGM is too low, and thus the specific heat is very low, which means it cannot retain heat energy. Also, the mean free path is too long (in the range of light year) for collisions to occur in sufficient numbers to maintain millions of degrees temperature. Therefore the IGM needs sustained energy supply to glow/emit in the X-ray region continuously for ages. The only sensible source of energy nearby is the stars in the galaxies, which are constantly generating heat.



So, what is the mechanism that is continuously pumping energy to the IGM? One possibility is magnetic heating. An example is the mysterious solar corona heating. The Sun's surface is about 6000 Kelvin. But as one goes further away to the corona region, the heat there is millions of Kelvin. The coronal heating has been attributed to magnetic heating (Ref. 4) in a similar fashion to how an induction heater works. Observations show that the coronal X-ray emission of the Sun and other stars depends on the surface magnetic field. Another possibility is that energy can be carried by the fabric of SpaceTime itself and dumped at far off regions. There is a strong link

between SpaceTime (root source of gravity as per Einstein) and electromagnetism. Kaluza's theory unified Einstein's field equations of SpaceTime and electromagnetism (Ref. 5). Unfortunately, the theory had been neglected by scientists for too long as it seems to require a fifth dimension. However Mr. Waugh has shown (Ref. 6) that this fallacy/error occurred due to improper understanding of imaginary numbers. When an imaginary sign is present, an additional dimension (i.e. perpendicular axis) is not created. An imaginary sign hides in the crucial Minkowski SpaceTime metric (as well as Schwarzschild metric). Minkowski metric is not an equation for 4D SpaceTime continuum (as Einstein and Minkowski wrongly believed). It all boils down to one missing dimension, which has created a mess in physics and cosmology. Therefore, Kaluza's forgotten ideas must be revived. The exact mechanism behind the electromagnetic energy transfer by the fabric of SpaceTime is still unclear and mysterious. But it is clear that electromagnetism is the presence of a non-vanishing torsion (certain local tensions or twists) in the fabric of SpaceTime. Maxwell's equations of electromagnetism are an optimality condition for the metric of spacetime to be sufficiently flat. Electric current seems to be a re-balancing object, which transports charge in order to keep the spacetime manifold Ricci-flat. Since, at large distances from the galaxies, the curved/warped SpaceTime structure tries to become flat, it might dump electromagnetic energy to the rarified plasma. Some additional insights (for scientists and technical experts only) are provided in the FURTHER READING section.

DARK MATTER and COSMIC FILAMENT STRUCTURE: The Schwarzschild metric, which is an exact solution to the Einstein field equations that describes the gravitational field outside a spherical mass, is actually a mathematical statement for a stretched, dynamic 3D hypersurface (which is generally called the 3D space), moving with a velocity c in the fourth dimension, rather than a statement for warped 4D SpaceTime continuum (as Einstein wrongly believed). The Flamm paraboloid is an accurate geometric representation of the Schwarzschild metric (contrary to popular belief) if the dynamic nature is also considered. Hence, the rubber membrane/sheet model, which is used to teach General Relativity in schools and colleges, should be taken rather literally rather than as an analogy. The 3D hypersurface (HS) is composed of scalar fields and particles (FP), and hence referred to as 3D FPHS. Picturing gravity as a stretching of 3D FPHS rather than warping of 4D spacetime magically solves all Dark Matter related problems. It also naturally explains the cosmic filament structure, which is a priority study subject for XRISM. Massive objects like stars and planets are embedded like thin coins inside the 3D FPHS itself (when viewed from the 4th dimension), and stretches the 3D FPHS along the 4th dimension. This stretching is seen by 'flatlander' human beings (trapped inside the 3D FPHS) as warping of 4D SpaceTime continuum, causing gravity as General Relativity (GR) insist. Since the 3D hypersheet is a single continuous fabric/sheet, and since all massive objects nearby stretch this sheet in a single direction, therefore the collective stretching gets enormously amplified (see image). The resultant increased stretching bends light rays enormously (through gravitational lensing) and gives false impression of huge amounts of Dark Matter halo. Again, when two metal balls are placed on a long strip of rubber membrane, the membrane along the line connecting the two balls dips like a valley. Viewed from above, it looks like a river flowing through a valley with two hills running along both banks. Plasmas and other baryonic matter prefer to settle along the dip of the valley. To a 3D creature, trapped inside the 3D FPHS (rubber membrane), this long valley

will look like a tube/filament, joining two galaxies (or Galaxy clusters).

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- 3) Quantum Mechanics and General Relativity are compatible, and have a common origin: the expanding (hyper) balloon universe
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https://en.wikipedia.org/wiki/Kaluza%E2%80%93Klein_theory
- 6) RRCAT Physicist Claims Correct Representation of Imaginary Numbers May Unify General Relativity and Quantum Mechanics
<https://finance.yahoo.com/news/rrcat-physicist-claims-correct-representation-202518538.html>

FURTHER READING (for experts only)

Electromagnetism is a property of spacetime itself, study find
<https://sciencex.com/news/2021-07-electromagnetism-property-spacetime.html>

Maxwell's equations in curved spacetime
https://en.wikipedia.org/wiki/Maxwell%27s_equations_in_curved_spacetime

Spacetime structure and electromagnetism
<https://www.worldscientific.com/doi/10.1142/S0217732310032883>
(The main conclusion is that a necessary condition for geometric representation of electromagnetism is the presence of a non-vanishing torsion in the geometry used.)

Do electric charges and magnets distort space, in the way that a source of gravity does?
<https://www.scientificamerican.com/article/do-electric-charges-and-m/>

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