Mass Is Scalar Or Vector

Tensor–vector–scalar gravity Tensor–vector–scalar gravity (TeVeS), developed by Jacob Bekenstein in 2004, is a relativistic generalization of Mordehai Milgrom's Modified Newtonian Tensor–vector–scalar gravity (TeVeS), developed by Jacob Bekenstein in 2004, is a relativistic generalization of Mordehai Milgrom's Modified Newtonian dynamics (MOND) paradigm 6e8d40dc48

STVG has been used successfully to explain galaxy rotation curves, the mass profiles of galaxy clusters, gravitational lensing in the Bullet Cluster, and cosmological observations without the need for dark matter. On a smaller scale, in the Solar System, STVG predicts no observable deviation from general relativity. The theory may also offer an explanation for... 6e8d40dc48

Vector (mathematics and physics) It may denote a vector quantity, i. The term may also be used to refer to elements of vector spaces, that can be added together and multiplied ("scaled") by scalars. e. vector is a generalization of a single number. , physical quantity that cannot be expressed by a single scalar quantity. In some contexts, vectors are tuples, which are finite sequences (of numbers or other objects) of a fixed length. e. , physical quantity that cannot be expressed by a single scalar quantity In mathematics and physics, a vector is a generalization of a single number. It may denote a vector quantity, i 6e8d40dc48

Scalar–tensor–vector gravity theory, also known as MOdified Gravity (MOG), is based on an action principle and postulates the existence of a vector field, while elevating the three constants of the theory to scalar fields. In the weak-field approximation, STVG produces a Yukawa-like modification of the gravitational force due to a point source. Intuitively, this result can be described as follows: far from a source gravity is stronger than the Newtonian prediction, but at shorter distances, it is counteracted by a repulsive fifth force due to the vector field. 6e8d40dc48 Scalars may represent the magnitude of physical quantities, such as speed is to velocity. Scalars do not represent a direction. 6e8d40dc48 The signature of the metric employed below is (+ − − −). 6e8d40dc48

Vector field Thus, suppose that (x1,. , xn) is a choice of Cartesian coordinates, in terms of which the components of the vector V In vector calculus and physics, a vector field is an assignment of a vector to each point in a space, most commonly Euclidean space. of scalars, or from a covector 6e8d40dc48

== Relationship with the mathematical concept == 6e8d40dc48 The theory is based on the following ingredients: 6e8d40dc48 As it is derived from the action principle, TeVeS respects conservation laws; 6e8d40dc48 The main features of TeVeS can be summarized as follows: 6e8d40dc48

Scalar potential confusion with vector potential). The scalar potential is an example of a scalar field. A familiar example is potential energy due to gravity. Given a vector field F, the scalar potential P is defined such that: In mathematical physics, scalar potential describes the situation where the difference in the potential energies of an object in two different positions depends only on the positions, not upon the path taken by the object in traveling from one position to the other. It is a scalar field in three-space: a directionless value (scalar) that depends only on its location 6e8d40dc48

Since they do not involve polarization complications, scalar fields are often the easiest to appreciate second quantization through. For this reason, scalar field theories are often used for purposes of introduction of novel concepts and techniques. 6e8d40dc48 Note: This article focuses on relativistic classical field theories of gravitation. The best known relativistic classical field theory of gravitation, general relativity, is a tensor theory, in which the gravitational interaction is described using a tensor field. 6e8d40dc48

Scalar field Model of elementary particles, a scalar Higgs field is used to give the leptons and

massive vector bosons their mass, via a combination of the Yukawa In mathematics and physics, a scalar field is a function associating a single number to each point in a region of space – possibly physical space. The scalar may either be a pure mathematical number (dimensionless) or a scalar physical quantity (with units) 6e8d40dc48

A scalar in physics and other areas of science is also a scalar in mathematics, as an element... 6e8d40dc48 A 6e8d40dc48 A scalar potential is a fundamental concept in vector analysis and physics (the adjective scalar is frequently omitted if there is no danger of confusion with vector potential). The scalar potential is an example of a scalar field. Given a vector field F, the scalar potential P is defined such that: 6e8d40dc48 Both geometric vectors and tuples can be added and scaled, and these vector operations led to the concept of a vector space, which is a set equipped with a vector addition and a scalar multiplication that satisfy some axioms generalizing the main properties of operations on the above sorts of vectors. A vector space formed by geometric vectors is called a Euclidean vector space, and a vector space formed by tuples is called a coordinate vector... 6e8d40dc48

Euclidean vector A vector quantity is a vector-valued physical quantity, including units of measurement and possibly a support, formulated as a directed line segment. A vector is frequently depicted graphically as an arrow connecting an initial point A with a terminal point B, and denoted by. Euclidean vectors can be added and scaled to form a vector space. a Euclidean vector or simply a vector (sometimes called a geometric vector or spatial vector) is a geometric object that has magnitude (or length) and In mathematics, physics, and engineering, a Euclidean vector or simply a vector (sometimes called a geometric vector or spatial vector) is a geometric object that has magnitude (or length) and direction 6e8d40dc48

As it is a relativistic theory it can accommodate gravitational lensing. 6e8d40dc48 A change of a vector space basis changes the description of a vector in terms of the basis used but does not change the vector itself, while a scalar has nothing to do with this change. In classical physics, like Newtonian mechanics, rotations and reflections preserve scalars, while in relativity, Lorentz transformations or space-time translations preserve scalars. The term "scalar" has origin in the multiplication of vectors by a unitless scalar, which is a uniform scaling transformation. 6e8d40dc48 In the weak-field approximation of the spherically symmetric, static solution, TeVeS reproduces the MOND acceleration formula; 6e8d40dc48 Mathematically, a scalar field on a region U is a real or complex-valued function or distribution on U. The region U may be a set in some Euclidean space, Minkowski space, or more generally a subset of a manifold, and it is typical in mathematics to impose further conditions on the field, such that it be continuous or often continuously differentiable to some order. A scalar field is a tensor field of... 6e8d40dc48

Scalar–tensor–vector gravity The theory is also often referred to by the acronym MOG (MOdified Gravity). Scalar–tensor–vector gravity (STVG) is a modified theory of gravity developed by John Moffat, a researcher at the Perimeter Institute for Theoretical Physics Scalar–tensor–vector gravity (STVG) is a modified theory of gravity developed by John Moffat, a researcher at the Perimeter Institute for Theoretical Physics in Waterloo, Ontario 6e8d40dc48

== Overview == 6e8d40dc48 The prototypical scalar theory of gravitation is Newtonian gravitation. In this theory, the gravitational interaction is completely described by the potential 6e8d40dc48 R 6e8d40dc48 B 6e8d40dc48

Scalar theories of gravitation Scalar theories of gravitation are field theories of gravitation in which the gravitational field is described using a scalar field, which is required Scalar theories of gravitation are field theories of gravitation in which the gravitational field is described using a scalar field, which is required to satisfy some field equation 6e8d40dc48

== Newtonian gravity == 6e8d40dc48

Scalar (physics) A scalar in physics and other areas of science is also a scalar in mathematics Scalar quantities or simply scalars are physical quantities that can be described by a single pure number (a scalar, typically a real number), accompanied by a unit of measurement, as in

"10 cm" (ten centimeters). multiplication of vectors by a unitless scalar, which is a uniform scaling transformation 6e8d40dc48

The only fundamental scalar quantum field that has been observed in nature is the Higgs field. However, scalar quantum fields feature in the effective field theory descriptions of many physical phenomena. An example is the pion, which is actually a pseudoscalar. 6e8d40dc48 Historically, vectors were introduced in geometry and physics (typically in mechanics) for quantities that have both a magnitude and a direction, such as displacements, forces and velocity. Such quantities are represented by geometric vectors in the same way as distances, masses and time are represented by real numbers. 6e8d40dc48 TeVeS avoids the problems of earlier attempts to generalize MOND, such as superluminal propagation; 6e8d40dc48 Examples of scalar quantities are length, mass, charge, volume, and time. 6e8d40dc48 == Definition == 6e8d40dc48 Scalars are unaffected by changes to a vector space basis (i.e., a coordinate rotation) but may be affected by translations (as in relative speed). 6e8d40dc48 In a physical context, scalar fields are required to be independent of the choice of reference frame. That is, any two observers using the same units will agree on the value of the scalar field at the same absolute point in space (or spacetime) regardless of their respective points of origin. Examples used in physics include the temperature distribution throughout space, the pressure distribution in a fluid, and spin-zero quantum fields, such as the Higgs field. These fields are the subject of scalar field theory. 6e8d40dc48

Scalar field theory theoretical physics, scalar field theory can refer to a relativistically invariant classical or quantum theory of scalar fields. A scalar field is invariant under any Lorentz transformation. A scalar field is invariant under In theoretical physics, scalar field theory can refer to a relativistically invariant classical or quantum theory of scalar fields 6e8d40dc48

== Classical scalar field theory == 6e8d40dc48

https://ftp.spruitsportcoaching.nl/~f/ref/mirror?CHAPTER=do-air_purifiers-help_with__mold
https://ftp.spruitsportcoaching.nl/$j/slide/goto?PUB=rule__of_thumb__meaning
https://ftp.spruitsportcoaching.nl/!l/chap/data?EBOOK=red-and-white_blood__cells
https://ftp.spruitsportcoaching.nl/~e/short/url?ITUNE=two_squares__in__a_circle-pendant
https://ftp.spruitsportcoaching.nl/_d/short/file?MD=bones_in-an__ankle
https://ftp.spruitsportcoaching.nl/~t/pub/mirror?TXT=why_does_my-newborn__grunt_so__much
https://ftp.spruitsportcoaching.nl/=c/slide/link?PPT=cst_means_in__medical
https://ftp.spruitsportcoaching.nl/=e/journal/key?CHAPTER=m7__5__concrete-ratio
https://ftp.spruitsportcoaching.nl/$n/text/key?CHAPTER=how_long_can__you_keep-cooked_rice__in-the-fridge
https://ftp.spruitsportcoaching.nl/=j/science/niche?CHAPTER=easiest_way-of__committing_suicide
https://ftp.spruitsportcoaching.nl/~j/ppt/niche?PAGE=para-que__sirve-la__indometacina-betametasona-metocarbamol
https://ftp.spruitsportcoaching.nl/_o/ref/goto?EPUB=wagga__wagga__new__south_wales-australia