

## The Scalar Tensor Theory Of Gravitation

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### Scalar-Tensor Theory of Gravitation (Cambridge Monographs ...

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.. 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 ...

### Scalar-tensor theory - Wikipedia

The scalar-tensor theory of gravitation is one of the most popular alternatives to Einstein's theory of gravitation. This book provides a clear and concise introduction to the theoretical ideas and developments, exploring scalar fields and placing them in context with a discussion of Brans-Dicke theory.

### More on the scalar-tensor BF theory (Journal Article ...

The scalar-tensor theory of gravitation moved into the limelight in recent years due to developments in string theory, M-theory and 'brane world' constructions. This book introduces the subject at a level suitable for both graduate students and researchers.

### Scalar theories of gravitation - Wikipedia

Abstract. A scalar-tensor theory of gravitation is constructed using the Weyl formulation of Riemannian geometry. The scalar field is given an important geometrical role to play and is related to the integrable change in length of a vector as it is transported from point to point in space-time. The geometry uses modified covariant derivatives and a metric tensor which is not covariantly constant.

### The Scalar Tensor Theory Of

In theoretical physics, a scalar-tensor theory is a field theory that includes both a scalar field and a tensor field to represent a certain interaction. For example, the Brans–Dicke theory of gravitation uses both a scalar field and a tensor field to mediate the gravitational interaction .

### [2101.12196] Echoes of Compact Objects in Scalar-Tensor ...

In mathematics, a tensor is an algebraic object that describes a (multilinear) relationship between sets of algebraic objects related to a vector space.Objects that tensors may map between include vectors and scalars, and even other tensors.Tensors can take several different forms – for example: scalars and vectors (which are the simplest tensors), dual vectors, multilinear maps between ...

### Scalar field - Wikipedia

Scalar-tensor theory predicts solutions to the gravitational field equations which describe compact objects in the presence of a non-minimally coupled scalar field to the Einstein tensor. These objects are black holes with scalar hair and wormholes supporting scalar phantom matter. The evolution of test fields in fixed asymptotically-flat backgrounds of exotic compact objects leads to the ...

### The Scalar-Tensor Theory of Gravitation (Cambridge ...

The scalar-tensor theory of gravitation is one of the most popular alternatives to Einstein's theory of gravitation. This book provides a clear and concise introduction to the theoretical ideas and developments, exploring scalar fields and placing them in context with a discussion of Brans-Dicke theory. Topics covered include the cosmological constant problem, time variability of coupling constants, higher dimensional space-time, branes and conformal transformations.

### Brans-Dicke theory - Wikipedia

Unfortunately, it doesn't give you a four-dimensional tensor theory of gravity, but rather a 10-dimensional scalar-tensor theory of gravity. Somehow, you have to get rid of the scalar part, and ...

### The Scalar-Tensor Theory of Gravitation by Yasunori Fujii ...

Gravitation in Unified Scalar Field Theory ... In the above-mentioned attempts to construct a unified field theory, the choice of the tensor rank of the field was based on certain correspondence considerations. For example, the nonlinear electrodynamics models generalized the linear electrody-

### The Scalar-Tensor Theory of Gravitation by Yasunori Fujii

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### Echoes of Compact Objects in Scalar-Tensor Theories of ...

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### Gravitation in Unified Scalar Field Theory

In the scalar-tensor theory of gravitation it seems nontrivial to establish if solutions of the cosmological equations in the presence of a cosmological constant (or a vacuum energy) behave as attractors independently of the initial values.

### Tensor - Wikipedia

Although not normally considered a Scalar-Tensor theory of gravity, the 5 by 5 metric of Kaluza–Klein reduces to a 4 by 4 metric and a single scalar. So if the 5th element is treated as a scalar gravitational field instead of an electromagnetic field then Kaluza–Klein can be considered the progenitor of Scalar-Tensor theories of gravity.

### The Dream Of String Theory Is An Unlikely Broken Box

Scalar-tensor theory predicts solutions to the gravitational field equations which describe compact objects in the presence of a non-minimally coupled scalar field to the Einstein tensor. These objects are black holes with scalar hair and wormholes supporting scalar phantom matter. The evolution of ...

### Alternatives to general relativity - Wikipedia

Proposed theory of gravitation In theoretical physics, the Brans–Dicke theory of gravitation is a theoretical framework to explain gravitation. It is a competitor of Einstein's theory of general relativity. It is an example of a scalar-tensor theory, a gravitational theory in which the gravitational interaction is mediated by a scalar field as well as the tensor field of general relativity. The gravitational constant G is not presumed to be constant but instead 1/G is replaced by a ...

### Scalar-tensor extension of the ΛCDM model (Journal Article ...

This work is based on an earlier proposal [H. Singh, Phys. Lett. B 673, 68 (2009)] that the membrane BF theory consists of matter fields along with Chern-Simons fields as well as the auxiliary pairs of scalar and tensor fields. In particular, we discuss the supersymmetry aspects of such a membrane ...

### The scalar-tensor theory of gravitation - INSPIRE

scalar-tensor theories represent the gravitational interaction through both a tensor and a scalar. Such attempts are for example the Jordan theory [6] as a generalization of the Kaluza–Klein theory and the Brans–Dicke theory .