

Index

A

Affine Measurement of Vectors
2.3: Affine Properties of Lorentz Geometry (Part 2)
Affine Notions
3.3: Affine Notions and Parallel Transport
angular defect
5.4: Curvature in Two Spacelike Dimensions

B

Birkhoff's Theorem
7.4: Static and Stationary Spacetimes (Part 1)
black holes
6.4: Black Holes (Part 1)
6.5: Black Holes (Part 2)

C

Causality
1.1: Time and Causality
7.3: Penrose Diagrams and Causality
Cavendish balance
8.1: Sources in General Relativity (Part 1)
Chandrasekhar limit
8.5: Cosmological Solutions (Part 3)
Chiao's Paradox
1.5: The Equivalence Principle (Part 1)
Christoffel symbols
5.8: The Geodesic Equation
5.10: From Metric to Curvature
closed timelike curve (CTC)
1.1: Time and Causality
colatitude
5.7: The Covariant Derivative
conical singularity
6.5: Black Holes (Part 2)
Conservation laws
4.6: Conservation Laws
Coordinate Independence
3.9: Interpretation of Coordinate Independence
coordinate singularity
6.4: Black Holes (Part 1)
Cosmic Censorship Hypothesis
6.5: Black Holes (Part 2)
cosmological constant
2.6: The Light Cone
8.1: Sources in General Relativity (Part 1)
Covariant Derivative
5.7: The Covariant Derivative
CPT symmetry
3.7: The Metric (Part 2)
curvature
5: Curvature
Curvature Tensors
5.5: Curvature Tensors
curved spacetime
3.4: Models

D

de Sitter spacetime
8.5: Cosmological Solutions (Part 3)
differentiable manifold
5.12: Manifolds (Part 2)

E

Eötvös Experiments
1.5: The Equivalence Principle (Part 1)
Ehrenfest's Paradox
3.7: The Metric (Part 2)
Einstein field equation
5.7: The Covariant Derivative
8.1: Sources in General Relativity (Part 1)
Einstein summation notation
3.6: The Metric (Part 1)
Einstein tensor
8.1: Sources in General Relativity (Part 1)
Einstein's ring
3.4: Models
Equivalence Principle
1.5: The Equivalence Principle (Part 1)
1.6: The Equivalence Principle (Part 2)
2.8: Three Spatial Dimensions (Part 1)
Erlangen Program
3.7: The Metric (Part 2)
Euclidean Metric
3.6: The Metric (Part 1)
3.7: The Metric (Part 2)
event horizon
6.1: Event Horizons
6.4: Black Holes (Part 1)

F

Flat Spacetime
2: Geometry of Flat Spacetime
FRW Metric
8.3: Cosmological Solutions (Part 1)

G

Gödel metric
5.13: Units in General Relativity
Gaussian curvature
5.4: Curvature in Two Spacelike Dimensions
Gaussian Normal Coordinates
5.4: Curvature in Two Spacelike Dimensions
geodesic
1.5: The Equivalence Principle (Part 1)
5.8: The Geodesic Equation
geodesic equation
5.8: The Geodesic Equation
Geodesic motion
8.6: Sources in General Relativity (Part 3)
Geodetic Effect
5.6: Some Order-of-magnitude Estimates
6.3: The Schwarzschild Metric (Part 2)
Gravitational Radiation
9.2: Gravitational Radiation (Part 1)
9.3: Gravitational Radiation (Part 2)
gravitational torsion
5.9: Torsion
Gravitational waves
9: Gravitational Waves
Gravity Probe B
5.6: Some Order-of-magnitude Estimates
Gyroscopes
2.8: Three Spatial Dimensions (Part 1)

H

Hausdorff Property
5.11: Manifolds (Part 1)
Hausdorff space
5.11: Manifolds (Part 1)
Hawking radiation
6.5: Black Holes (Part 2)
heliotrope
5.4: Curvature in Two Spacelike Dimensions
Hole argument
3.8: The Metric in General Relativity

I

inertial frame
1.5: The Equivalence Principle (Part 1)
isometries
3.7: The Metric (Part 2)
Isometry
3.7: The Metric (Part 2)
Ives–Stilwell experiments
4.3: Four-vectors (Part 2)

K

Kasner metric
7.6: The Uniform Gravitational Field Revisited
Killing equation
7.1: Killing Vectors
Killing Vectors
7.1: Killing Vectors
Kretschmann invariant
7.4: Static and Stationary Spacetimes (Part 1)
Kretschmann invariant
6.4: Black Holes (Part 1)

L

light cone
2.6: The Light Cone
LIGO
9.2: Gravitational Radiation (Part 1)
LISA
9.2: Gravitational Radiation (Part 1)
Lorentz
2.1: Introduction to Geometry of Flat Spacetime
Lorentz boosts
2.6: The Light Cone
2.9: Three Spatial Dimensions (Part 2)
3.5: Intrinsic Quantities
Lorentz Frame
1.5: The Equivalence Principle (Part 1)
Lorentz Geometry
2.7: Experimental Tests of Lorentz Geometry
Lorentz scalar
4.1: Lorentz Scalars
Lorentz vector
4.2: Four-vectors (Part 1)
lunes
3.5: Intrinsic Quantities

M

Mach's Principle

[8.8: Mach's Principle Revisited](#)

Machian Paradox

[3.8: The Metric in General Relativity](#)

Milne Universe

[8.4: Cosmological Solutions \(Part 2\)](#)

Muon

[1.2: Experimental Tests of the Nature of Time](#)

N

null infinity

[7.5: Static and Stationary Spacetimes \(Part 2\)](#)

P

Parallel transport

[3.3: Affine Notions and Parallel Transport](#)

Penrose Diagrams

[7.3: Penrose Diagrams and Causality](#)

Petov metric

[7.6: The Uniform Gravitational Field Revisited](#)

Planck length

[6.5: Black Holes \(Part 2\)](#)

Playfair's axiom

[1.4: Ordered Geometry](#)

R

rapidity

[2.6: The Light Cone](#)

Ricci curvature

[5.3: The Stress-energy Tensor](#)

Ricci scalar

[6.4: Black Holes \(Part 1\)](#)

Riemann curvature tensor

[5.5: Curvature Tensors](#)

ring laser

[2.8: Three Spatial Dimensions \(Part 1\)](#)

S

Sagnac effect

[2.8: Three Spatial Dimensions \(Part 1\)](#)

[3.7: The Metric \(Part 2\)](#)

Scalar curvature

[6.4: Black Holes \(Part 1\)](#)

Schwarzschild Metric

[6.2: The Schwarzschild Metric \(Part 1\)](#)

[6.3: The Schwarzschild Metric \(Part 2\)](#)

sectional curvature

[5.2: Tidal Curvature Versus Curvature Caused by Local Sources](#)

Singularity

[6.4: Black Holes \(Part 1\)](#)

Speed of Gravity

[9.1: The Speed of Gravity](#)

static spacetime

[7.4: Static and Stationary Spacetimes \(Part 1\)](#)

stationary spacetime

[7.4: Static and Stationary Spacetimes \(Part 1\)](#)

Sylvester's law of inertia

[6.6: Degenerate Solutions](#)

T

Tangent Space

[5.12: Manifolds \(Part 2\)](#)

Tensor Transformation Laws

[4.4: The Tensor Transformation Laws](#)

tensors

[4: Tensors](#)

Thomas Precession

[2.8: Three Spatial Dimensions \(Part 1\)](#)

[2.9: Three Spatial Dimensions \(Part 2\)](#)

tidal curvature

[5.2: Tidal Curvature Versus Curvature Caused by Local Sources](#)

topology of space

[5.11: Manifolds \(Part 1\)](#)

Torsion Tensor

[5.9: Torsion](#)

twin paradox

[1.3: Non-simultaneity and Maximum Speed of Cause and Effect](#)

U

Uniform Gravitational Field

[7.6: The Uniform Gravitational Field Revisited](#)

Unruh radiation

[6.1: Event Horizons](#)

V

vacuum field equation

[6.1: Event Horizons](#)

Velocity Disk

[2.9: Three Spatial Dimensions \(Part 2\)](#)