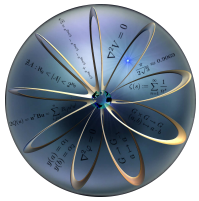

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fundamental concepts in differential geometry

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The following is an index of fundamental concepts in differental geometry. It only deals with basic concepts which are common to all branches of differential geometry. For concepts pertinent to specific branches of differential geometry, please see concepts in symplectic geometry and concepts in Riemannian geometry

0.1 Manifolds

- manifold
- smooth manifold
- manifold with boundary
- boundary manifold
- Riemannian manifold
- chart
- coordinate function
- coordinate map
- coordinate neighborhood
- coordinate system
- submanifold
- immersion
- differential structure
- diffeomorphism

0.2 Vector and Tensor Fields

- vector field
- tensor product
- contraction

- exterior product
- differential form
- exterior derivative
- tensor field
- jet
- spinor field
- Lie bracket
- Lie derivative
- flow
- integrable
- Pfaffian system
- frame fields
- Lie groups and algebras
- fields as section on bundles

0.3 Bundles and Connections

- fibre bundle
- vector bundle
- tangent bundle
- cotangent bundle
- jet bundle
- connection
- affine connection

- Riemannian metric
- curvature
- torsion
- geodesic
- homotopic classification and characteristic classes
- space of connections

0.4 Gauge theory

- non-Abelian gauge theory