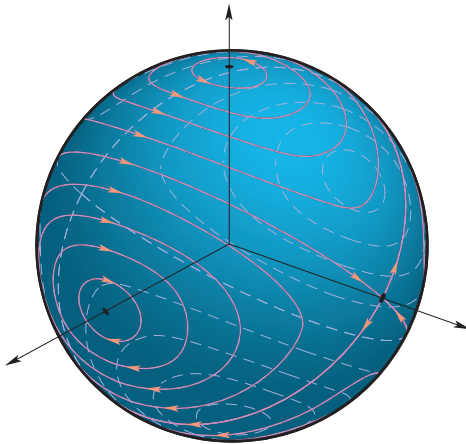# CDS 202

Geometry of Nonlinear Systems

Second Term: Winter 2005
TTh 10:30 AM - 12 noon
125 Steele

CDS 202 is the foundation course for work in geometric mechanics and geometric control theory. In addition, students wanting to work in applied fields like **fluid mechanics, elasticity, computational mechanics, computational geometry** and **variational integrators** will find this course useful.

$f^{-1}(c),\ c > 0$

$f = 0$

$f^{-1}(c),\ c < 0$
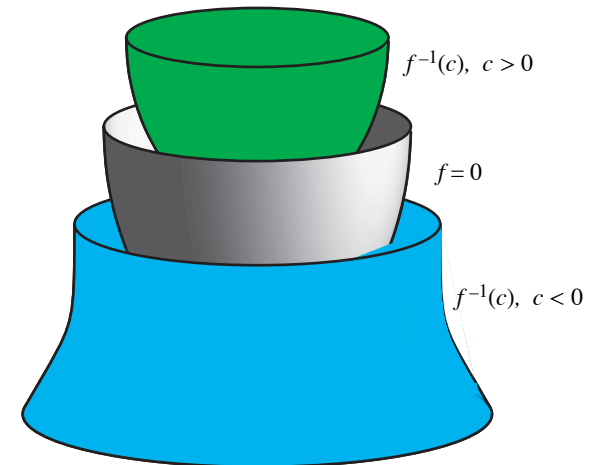
Course Description: Basic differential geometry, oriented toward applications in control and dynamical systems. Topics include smooth manifolds and mappings, tangent and normal bundles. Vector fields and flows. Distributions and Frobenius' theorem. Matrix Lie groups and Lie algebras. Exterior differential forms, Stokes theorem, Discrete exterior calculus. (9 units)

Instructor: Jerrold E. Marsden

www.cds.caltech.edu/~marsden

For further information, see the CDS 202 Course at

www.cds.caltech.edu/academic/courses/