1135-83-2734   **Lee Lindblom*** (`llindblom@ucsd.edu`), CASS UCSD 0424, 9500 Gilman Drive, La Jolla, CA 92093. *Developing Numerical Methods for Solving Geometrical PDEs on Manifolds with Arbitrary Spatial Topologies.*

Recent developments of numerical methods for solving geometrical PDEs on manifolds with arbitrary spatial topologies will be reviewed. In particular the problem of building a coordinate atlas and differential structure suitable for computational work will be discussed. A new symmetric-hyperbolic representation of Einstein's equation for performing numerical evolutions on such manifolds will be presented. And, examples of numerical solutions of Einstein's equation and the Ricci flow equation on manifolds with non-trivial topologies will be displayed. (Received September 26, 2017)