A Computational Interpretation of Curved Spacetime (Proposal)

Bryan Newbold

29th September 2008

Advisor: Prof. Gerald J. Sussman, EECS

To implement a geometric formulation of curved space time in a functional computer programming language, and to explore the space of simulations and manipulations made possible by such a formulation. A primary motivation is to state the foundations of General Relativity in a non-ambiguous manner.

References

[1] Functional Differential Geometry, G. Sussman and J. Wisdom (2005)

[2] Structure and Interpretation of Classical Mechanics, G. Sussman and J. Wisdom (2001)