

# Research Proposal: Geometry of Holographic Flow

Steven G. Avery

Faculty Advisor: Professor Sahakian

## 1 Introduction

Throughout my academic career and my studies in math and physics, string theory and differential geometry have loomed over me tantalizingly; now, I intend to study and research in these fields for my thesis. Once I understand the background material for my thesis topic better, my thesis topic will become more clearly defined. I have taken Differential Geometry with Professor Gu and am presently taking Fields and Waves and General Relativity. These courses should help me in my proposed research.

## 2 Proposed Research

I will be researching gravitational holography in the context of string theory. This will require using differential geometry, some group theory, and field theory. The mathematical content of my thesis then will primarily be differential geometry.

## 3 Prior Research

This subject has been studied by Witten [2] and Maldacena and many others [1].

## References

- [1] Ofer Aharony, Steven S. Gubser, Juan Maldacena, Hirosi Ooguri, and Yaron Oz, *Large N Field Theories, String Theory and Gravity*. <http://arXiv.org/list/hep-th/> operated and funded by Cornell University, (1 Oct. 1999).
- [2] Witten, Edward, *Anti De Sitter Space and Holography*. <http://arXiv.org/list/hep-th/> operated and funded by Cornell University, (6 Apr 1998).