

SANNAH ZIAMA

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THEORETICAL PHYSICIST

Recent Ph.D. in Theoretical High Energy Physics, specialized in string theory. Technical experience includes solving highly nonlinear problems of fundamental particle physics, using both advanced pure and applied mathematics to solve optimization problems in curved spaces—for example finding minimal area surfaces that end on the boundary of certain curved spaces, and presenting results to diverse audiences—specialists and non-specialists at national and international levels. Proficient in technical writing with publications and progress reports to funding institutions. Significant experience in data analysis, critical thinking, and driven by curiosity to answer deep questions. Seeking an opportunity to apply scientific research, mathematics, programming and analytical skills to solve problems with substantial benefits to society as well as to expand knowledge base.

SKILLS AND EXPERTISE

- Excellent written and verbal communication
- Proven excellent leadership and teamwork skills
- Strong analytical and creative problem-solving skills
- Expert knowledge of Mathematica, Good knowledge of Python, IPython, pandas, matplotlib, and NumPy
- Good machine learning skills

WORK EXPERIENCE

Postdoctoral Research Fellow, Department of Physics and Astronomy, University of Kentucky, Lexington, 2013-present

Work includes holographic computations of Wilson loops, entanglement entropy and area minimizing surfaces in hyperbolic spaces.

Teaching assistant, Department of Physics, Purdue University, West Lafayette, 2008–2009

PHYS 214 - The Nature of Physics (Physics for non-science majors)

Laboratory and recitation instructor, Physics Department, IUPUI, Indianapolis, 2006–2008

PHYS 152 - Mechanics

Recitation instructor, Physics Department, IUPUI, Indianapolis, 2006–2008

PHYS 251 - Heat, Electricity and Optics

Laboratory instructor, Engineering Department, IUPUI, Indianapolis, 2006–2007

ME 314 - Heat and Mass Transfer

EDUCATION

Purdue University, West Lafayette

2008-2013

PhD Theoretical High Energy Physics / String Theory

Thesis Title: *Euclidean Wilson loops in gauge/gravity duality*

Description: In this thesis an infinite class of special curves called Wilson loops with interesting mathematical properties were found using string theory prescription. Wilson loops measure the amount of energy needed to create a certain elementary particle and transport it around a closed loop. A Wilson loop is perhaps the most fundamental object in a gauge theory—a theory of elementary particles. In general, Wilson loops are very hard to calculate. This thesis finds new examples of Wilson loops and provides an easier way to do Wilson loop computations by considering area minimizing surfaces in curved spaces that are described by special mathematical shapes known as Riemann surfaces. Furthermore this thesis provides a substantial support for a very important conjecture which states that certain gauge theories and string theory are dual to each other.

Indiana University-Purdue University Indianapolis (IUPUI), Indianapolis

2006-2008

M.Sc. Mechanical Engineering

Specialty: Fluid and Thermal Sciences

Indiana University-Purdue University Indianapolis (IUPUI), Indianapolis

2004-2008

B.Sc. Physics

References & Publications Available Upon Request