

Joel Wesenberg
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Application as a PhD student at Bielefeld University in the High Energy Theory Group of Dr. Adrien Florio

Dear Dr. Florio and members of the Assessment Committee,

My name is Joel Wesenberg, and I have successfully completed my master's degree in theoretical cosmology at RWTH Aachen University. With this letter, I would like to express my strong interest in the advertised Ph.D. position on applying quantum methods and concepts to high-energy problems.

During my master's thesis, I focused extensively on cosmic inflation. I simulated two inflationary models using the program *CosmoLattice* and compared the results with analytical predictions. Through this work, I not only gained in-depth knowledge of various early universe models but also developed strong skills in numerical simulations and theoretical analysis. These experiences have deepened my passion for exploring early universe phenomena, and I am eager to expand my expertise in this field.

I believe that your research group provides an excellent environment to further develop my understanding of high-energy phenomena, particularly in the context of relativistic field theories. In addition to my background in cosmology and general relativity, I have a strong foundation in quantum field theory, which I am eager to apply to this project. My familiarity with lattice-based simulations also aligns well with the group's research focus. Having used *CosmoLattice* extensively in my master's thesis, I became aware of your contributions to the program, which further sparked my interest in your work. This overlap between my previous research and your ongoing projects makes me confident that I can contribute effectively while also broadening my expertise in an interdisciplinary setting.

Beyond my technical skills, I bring strong teamwork and communication abilities. I thrive in collaborative environments, value the exchange of ideas, and enjoy engaging with new people. My open-minded and motivated approach has consistently helped me integrate into diverse academic teams.

I would be excited to contribute my skills and enthusiasm to your research group. Thank you for your time and consideration. I would greatly appreciate the opportunity to discuss potential projects further and I look forward to your response.

Sincerely yours,

Joel Wesenberg