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## Sweeping vacuum gravitational waves under the rug

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## List of Publications

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- *An Étude on the Regularization and Renormalization of Divergences in Primordial Observables*  
Anna Negro, and Subodh P. Patil,  
e-Print: 2402.10008, *Riv.Nuovo Cim.* 47 (2024) 3, 179-228.
- *Hadamard Regularization of the Graviton Stress Tensor*  
Anna Negro, and Subodh P. Patil,  
e-Print: 2403.16806, submitted to *Phys.Rev.D*.



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# Curriculum Vitae

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I was born on June 29, 1996, in Treviso, Italy. Towards the end of high school, where my efforts were mainly focused on sports, I realized I wanted to become a researcher. This goal, combined with my growing fascination for physics, led me to move to Padova in 2015 to start my bachelor in physics. Despite starting my studies with the intention of becoming an experimental particle physicist, I realized, thanks to my bachelor thesis under the supervision of Prof. Dr. S. Matarrese, that I wanted to further investigate cosmology during my master's studies. Consequently, in 2018, I enrolled in the theoretical physics master's program at the University of Padova. During the first semester of my master's, I was captivated by general relativity and intrigued by quantum field theory, which led me to choose a curriculum in the interplay of high energy physics and cosmology, drifting towards a more and more theoretical approach. I spent the second year of my master's as an Erasmus student in Paris, where I had the opportunity to take courses at École Polytechnique and work with Dr. Y. Akrami on my master's project. This first experience outside Italy sparked my curiosity to live in different countries and come in contact with diverse environments.

Soon after my graduation, in October 2020, I started my PhD at the Lorentz Institute of Leiden University, under the supervision of Dr. S. P. Patil. During my PhD, I not only had the opportunity to continue studying and start working on challenging and fascinating topics, such as quantum field theory in curved space-time, effective field theory approaches and renormalization techniques, but also to visit, give talks, and attend PhD schools in the Netherlands, Italy, Spain, France, Canada, the United Kingdom and Germany. Furthermore, I was the teaching assistant for the courses *General Relativity* and *Effective Field Theory* and organized the *Cosmology Seminars*.

In the fall of 2024 I will start my postdoc at Case Western Reserve University, Cleveland, Ohio.



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# Acknowledgments

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My experience at the Lorenz Institute (or more generally at the University) would not have been the same without the many people who made the university a warm environment. Thanks to Alice, Fabrizio, Aravindh, Guadalupe and the soft matter group for welcoming me to Leiden and adopting me during Covid. Thank you also to the "theory corridor" for being friendly and willing to share cakes at the coffee break. Furthermore, thanks to Norman and all the measurement hall people, who made the evenings at the university (and not only) always fun.

I would like to thank the groups that hosted me for my talks, as well as the researchers I met during the PhD schools and conferences I attended or who visited the Lorentz Institute. Thank you for the interesting discussions and for making me appreciate the academic community.

Furthermore, I would like to thank Cliff Burgess; I am grateful for the opportunity to collaborate with you and spend time at PI, which reminded me how fun physics can be. Thank you, Yashar Akrami, for helping me during the most delicate periods of my career, toward the end of both my master's and my PhD. I am looking forward to (re)starting our collaboration.

Thank you to my parents for encouraging me to pursue my career. Thanks for helping me build the strength to challenge myself day by day, making it possible for me to achieve my goals and find my path. I would also like to thank my brother for being an example to me.

Kalli, George, Mouraya, and Laura, it is hard to choose what to thank you for, as I believe that your support has been fundamental in so many ways. Thank you, Laura, for helping me with the cover of this thesis, and to all my friends outside the

physics world, your presence was fundamental in perceiving these years in Leiden as more than just a step in my career. Thank you, of course, to the bouldering people for encouraging me to be taller and stronger. I would like to express my gratitude to Fred, who supported me day by day for most of my path towards the PhD.

In addition, I want to deeply thank my friends scattered across Europe. Thank you for continuing to be part of my life, whether by visiting me or calling me. Isotta and Greta, it is difficult to express how grateful I am to know that despite my long absences, you make time in your schedules to meet my last-minute plans of "I will be here this day at this time."

Finally, I would like to thank Dimitris for always patiently helping me find the key.