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## **Into the darkness : forging a stable path through the gravitational landscape**

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# Curriculum Vitæ

I was born and raised in Rethymnon, Greece, on the 31st of August 1990. Situated on the island of Crete, this town was the location where I attended primary school. During my secondary education, at the high school named «Πειραματικό Λύκειο Ρεθύμνου», I followed the science track, in preparation for my university degree.

In September 2009, I enrolled in the Physics department at the University of Utrecht where I finished my studies in 2012 with the Bachelor thesis “*Influence of the excess ion polarizability on the Electric Double Layer (EDL)*” under the supervision of Prof. dr. R.H.H.G. van Roij. I continued my studies in the Theoretical Physics Master program at the same university, graduating in October 2014. I did my Msc. reasearch under the supervision of dr. Umut Gürsoy resulting in a thesis with the title “*Magnetic Catalysis in Holographic Quantum Chromodynamics*”. After my graduation I stayed three more months while working on the same project.

In June 2015, I started my PhD research in the group of Prof. dr. Ana Achúcarro and dr. Alessandra Silvestri. The results of that work are described in this thesis. During these four years I focused my attention on one central topic which spans all my work. I collaborated intensively with dr. Antonio de Felice, dr. Noemi Frusciante, Simone Peirone and my direct supervisor, dr. Alessandra Silvestri.

During these years. I attended a number of schools in different countries and got the opportunity to present my work at conferences and during seminars in the Netherlands, Portugal, Spain, United Kingdom and the United States.

Finally, conform to my teaching responsibilities, I was the student assistant of the courses “Quantum Mechanics I” and “Relativistic Electrodynamics”.



# List of publications

The thesis is based on the following publications:

- N. Frusciante, G. Papadomanolakis and A. Silvestri, “An Extended action for the effective field theory of dark energy: a stability analysis and a complete guide to the mapping at the basis of EFTCAMB,” JCAP **1607**, 018 (2016).
- A. De Felice, N. Frusciante and G. Papadomanolakis, “On the stability conditions for theories of modified gravity in the presence of matter fields,” JCAP **1703**, 027 (2017).
- A. De Felice, N. Frusciante and G. Papadomanolakis, “de Sitter limit analysis for dark energy and modified gravity models,” Phys. Rev. D **96**, 024060 (2017).
- N. Frusciante, G. Papadomanolakis, S. Peirone and A. Silvestri, “The role of the tachyonic instability in Horndeski gravity,” JCAP **1902**, 029 (2019).

Other publications by the author:

- N. Frusciante and G. Papadomanolakis, “Tackling non-linearities with the effective field theory of dark energy and modified gravity,” JCAP **1712**, 014 (2017).

