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Curriculum Vitae

I was born on the 8th of July 1983 in Santiago, Chile; a rainy Friday as my parents have told me. I was a curious child, always asking questions and tearing apart my toys and other devices just to figure out how things work. I was lucky enough to have at my home in San Miguel a large library, with books from philosophy to general relativity; from literature to electrical engineering.

I coursed my primary studies at *Liceo Manuel Arriarán Barros*, a catholic school in La Cisterna, Santiago. I made really good friendships that I maintain to this day. Since I was a good student my parents decided to change me to a better school and my secondary studies were at *Instituto Nacional*, a prestigious public high-school in Santiago, Chile. I made some of my best friends there, sharing time with them discussing all kinds of topics from politics and religion to music and films.

I started my graduate studies under the *Plan Común* at Universidad de Chile in Santiago, a joint program for Engineering and Science studies. After finishing the *Plan Común*, I enrolled in the Electrical Engineering and Physics courses. After the first year, I decided to continue studying Physics and drop my Electrical Engineering studies. Finally, due to the similarity of the curricula, I decided to study Astronomy on top of Physics. From the Physics program, the most fun I had was working on the final project in the lab, in particular with Manuel Merello on the formation of SiC.

I finished my BSc studies on Astronomy and continued in the Master program in Astronomy at Universidad de Chile, where I worked under the supervision of Prof. Dr. Mario Hamuy on the use of type Ia supernovae as standard candles with data from the Carnegie Supernova Project (CSP). This was the first time that I felt working on a problem that was at the edge of the scientific knowledge. During the Master thesis, I learned all the processes involved in the analysis of optical imaging: from observations to the analysis, and the physics of supernovae; it was quite a rewarding experience. However, I wasn't completely sure whether to continue on Astronomy or not. At around that time, Mario told me about an open position at Las Campanas Observatory as a research assistant. It was part of the CSP program and it seemed to me like

a nice opportunity to see what to me was the “real” astronomy.

On 2008, I started to work at Las Campanas Observatory as a research assistant for the CSP. During this time at Las Campanas I greatly improved my skills on programming as well as creating, developing and maintaining the pipelines. I was well guided by Carlos Contreras and Luis Boldt in that task. The interaction with other astronomers either visitors or staff, greatly widened my view of astronomy. I vividly recall nice conversations with Wendy Freedman, Barry Madore, Nidia Morrel, Migel Roth, Mark Phillips and Dr. Krzemiński. I really enjoyed the time at the mountain performing observations and at the office in Colina el Pino with Luis, Herman, Abdo and Max.

The great experience that was for me working at Las Campanas motivated me to pursue a PhD. One of the questions that puzzled me during my Master studies was the problem of interstellar dust and decided to be my project during my PhD. I started my PhD studies at Leiden University under the supervision of Prof. Dr. Tielens on 2010 working on the study of PAHs and dust. During this time, I was able to work with observations from telescopes such as Herschel and SOFIA. I learned about the interstellar medium, dust and astrochemistry. I was also challenged by the theoretical study of carbon recombination lines, which started as a small project but ended up being half of my thesis.

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Finishing a PhD can be a daunting task but with a little help of friends and family it is bearable. While I would like to thank everyone that helped me during the development of this thesis and the time spent in Leiden, there is not enough space to do so. I apologize in advance in case someone that read this lines doesn't find his/her name.

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Arriving to a new country can be an overwhelming experience. However, upon my arrival I was lucky enough to meet Kalle, Carina, Carmen, Jeannette, Olivier, Joseph, Anton and Jean Baptiste. The time spent in picnics, playing koob and poker and mostly having fun was quite endearing.

Luis y Nena, excelentes anfitriones. Hicieron que me sintiera como en casa durante mi primera Navidad y año nuevo lejos de Chile. Herman que me hizo compañía a través de Skype tocando guitarra, como siempre.

Carlos, Emanuele, Gleb, Mher, I greatly appreciate the time spent with you, complaining about life and your funny discussions and stories. Specially when having beers, coffees and cigarettes.

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I would like to thank all of my office mates during these five years in Leiden: Sergio, Karoliina, Silvia, Kirstin, Héctor, Gustavo, Benne and Junfeng.

To the people that have shared their passion for music with me: Andra, Matteo, Mattia and Simon having fun rocking, and to Irene my salsa dancing partner, many thanks.

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