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## Clues from stellar catastrophes

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## Curriculum Vitae

I was born on July 10, 1981 in Auckland, New Zealand. From a young age, I was drawn to science, particularly fundamental physics and astronomy, and growing up I have fond memories of seeing Saturn's rings through a telescope in the back garden or reading popular books about the Universe.

After graduating from the top class at Auckland Grammar School, I enrolled in a conjoint (double) degree program to pursue interests both in physics and in other areas such as cognitive science. I graduated from the University of Auckland with both a Bachelor of Arts and a Bachelor of Science. The broad background offered in the degrees made many subjects appealing, but I ultimately stuck to my original passion for astrophysics and chose it for my master's topic at the same university.

My master's thesis, under the supervision of Dr. Graham Hill, involved developing a stellar evolution code out of static structure models. The effectiveness of my code was demonstrated by comparing the evolution results with those from other codes, and generating isochrones that were fitted to observations. I graduated from the Master of Science degree in 2010 with first-class honours and the highest possible grade.

While at the University of Auckland, I was a teaching assistant for many physics courses. I assisted with astronomy and astrophysics courses, as well as both introductory and advanced levels of physics theory and laboratory instruction. During my studies, I worked for many years at the Auckland Observatory, where I enjoyed presenting planetarium shows and talks to the public on astronomy as well as a large amount of involvement in developing that content. Additionally, in between degrees, I worked as a database administrator as well as full-time at the Auckland Observatory.

In 2011, I began my PhD programme in Leiden under the supervision of Prof. dr. Simon Portegies Zwart and Dr. Elena Maria Rossi. During this time, I have been a member of several groups: the computational astrophysics group (CAstLe, led by Prof. dr. Simon Portegies Zwart), the high-energy astrophysics group (led by Dr. Elena Maria Rossi) and the compact objects group (led by Dr. Alessandro Patruno). I have been involved in workshop organisation at Leiden Observatory, and have presented posters and talks, attended workshops and visited collaborators in a number of other locations, including Nijmegen (Netherlands), Como (Italy), Alajar (Spain) and Melbourne (Australia).



## List of publications

A. Rimoldi, E. M. Rossi, T. Piran and S. F. Portegies Zwart. The fate of supernova remnants near quiescent supermassive black holes. *Monthly Notices of the Royal Astronomical Society*, 447: 3096–3114, March 2015.

doi: 10.1093/mnras/stu2630

A. Rimoldi, E. M. Rossi, E. Costantini and S. F. Portegies Zwart. The contribution of young core-collapse supernova remnants to the X-ray emission near quiescent supermassive black holes. *Monthly Notices of the Royal Astronomical Society*, 456: 2537–2549, December 2015.

doi: 10.1093/mnras/stv2799

A. Rimoldi, S. F. Portegies Zwart, E. M. Rossi. Simulations of stripped core-collapse supernovae in close binaries. *Computational Astrophysics and Cosmology*, 3: 1–19, March 2016.

doi: 10.1186/s40668-016-0015-4

A. Rimoldi, S. F. Portegies Zwart, E. M. Rossi, et al. A method to infer globular cluster evolutionary history from observations of blue stragglers: the case of Hodge 11. *To be submitted*.



## Acknowledgements

Arriving for the PhD, the end seemed so far off in the future. The years have flown by far faster than I imagined, but they have been very rich, both with interesting work at the Sterrewacht and great times outside it. So, there are many people I want to thank!

First of all, thank you, Simon and Elena, for offering the opportunity of the PhD to this bloke from the opposite side of the world. I greatly appreciate all of the guidance and support you have offered me over the past several years—thank you. An important part in helping me get to the PhD was also the mentorship of my master's supervisor, Graham Hill—thanks, Graham, for your guidance back at Auckland.

Many staff at the Sterrewacht have offered assistance during my PhD. Evelijn, thanks for all your kind help with many things during my time at the Sterrewacht. Thanks also to Alexandra, Anita, Arianne, David, Debbie, Els, Erik, Jeanne, Leonardo and Liesbeth for your assistance, whether it be looking after packages from New Zealand or trying to get the 3D printer to work! Xander, thanks for your guidance during the final year (despite a full schedule of frantic PhD students to follow!).

I have enjoyed being part of a few different research groups during my time at Leiden, with a great diversity of topics that kept group meetings interesting. In Simon's CAsLe group, thank you to Adrian, Arjen, Bernadetta, Carmen, Dan, Edwin, Evghenii, Inti, Jeroen, Lucie, Michiko, Martha, Masaki, Nathan, Nora, Silvia, Steven, Thomas, Tjarda, Tjibaria and everyone else who has visited the group for many years of interesting discussions. Arjen, Inti and Nathan, thanks for your generous advice and help with using AMUSE. To the members of Elena's group over the years, Bart, Clément, James, Joshua, Mark, Tommaso, Steven, Valeriya, as well as Alessandro, Ann-Sofie, Caroline, Magdalena (and everyone who overlaps) in the compact object group, thank you for all the interesting and helpful meetings.

The size of the Sterrewacht makes for a vibrant graduate life that must be unparalleled. I'm fortunate to have met many wonderful people both inside and outside the Sterrewacht in the past several years, and so many of you have made an impact that can't be summarised in this short section. My first memories of Leiden are from before the PhD had even started, and all the prospective students were given a warm welcome by Marissa and Tiffany (also introducing some of us to the Bonte Koe, still one of my favourite spots in town!). I'm very glad to have gotten to know you both since that

first day. Thanks for being such kind and supportive friends over the years (amongst many trips away, parties, brews...). Andra, Heather, Marco, Monica—thank you for all your friendship since we started together in Leiden. Each of you has been a wonderful friend over these years. Thanks for all the memorable trips, chats, brunches and borrels (as organisers and participants!), and great times in between. Allison and Mason, I'm grateful to have been able to get to know you later in the PhD, and for more than making up for 'lost time' with your most excellent friendship and many fun times!

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While in Leiden, I have been lucky to meet a number of great friends outside of astronomy. To the 'locals'—Gorana, Mark, Mart, Olga, René, I've had a blast with you guys since some of the earliest days in Leiden, and I can't think of a better crowd to have gotten to know for life outside of the observatory! Thanks for all the great times visiting new places, and back at home—whether watching (good and bad) movies, or trying to beat Tom at poker. Alex (West), Allie, Bernard, Tom, Victor, I'm grateful to have you as good friends—and not just significant others of Sterrewachters (which goes to show astronomers can have excellent taste in partners outside the observatory!). Thanks for the many great times around Leiden and beyond. Graeme, Marlinda, Yuval and everyone else at the flats, it has been great to get to know you all over these years!

To all my friends from home—it's too long between visits, but no matter how long it's been, whenever I see you guys, thanks for being there as if we'd never left (as Jamie recently put it so well). Jamie, Martin, Peter and Simon, I'm glad to have been able to catch you all at various points during the PhD, and to have shared in some very significant moments in your lives over that time.

And, not least, to my family—thanks for keeping the home fires burning. I wouldn't be here without your support, and I've missed you all during these years at the antipodes. Dylan and Simone, thank you for all your support. It means a lot to me that you could be a part of my thesis and graduation with each of your important contributions. To my parents—thank you for showing me the Universe is so full of wonderful things. Da, I know you would be proud to see me graduate—you will be in my thoughts. Mum, your support has kept me going in too many ways to mention. Thank you for always being there for me.