I see this thesis as a bouquet. Each of the steps in its making – the flowers being picked, pruned, trimmed and tied together with a ribbon of common theme – was a small adventure within the larger quest. A few were involved in the entire process, some added a precious item here and there, suggestions of many were of great value, and watching the rest provided much inspiration. The contribution of each is significant in this valuable unlearning and learning experience and what follows is only a humble attempt at expressing my gratitude for the same.

It is impossible to ignore Raffaella’s indomitable energy and the almost-infectious optimism. Even when she had five students to supervise, three of them very close to finishing, the amount of attention she devoted to our work made each of us feel we were the only ones she was responsible for. I can only see all the projects presented in this thesis as ‘our’ projects. She has just always been there, guiding the work at the same time giving enough space for independent thought, taking every idea with the same seriousness and interest, helping create collaborations, recognising the impact of our results, reading through the drafts at lightning speed, and being understanding whenever the situation demanded.

It is a privilege to have someone with as critical an eye as Tom on our side. I highly admire his capability to pick up small nuances that, in fact, have large implications and introduce an entirely new point of view. Also, special thanks to him for giving the finishing touches to my Dutch summary. I fear that I may not be able to sufficiently express my gratitude for all that I have received from my supervisors and hope it suffices to say that this thesis is not because of me but in spite of me.

I am greatly indebted to Nissim for introducing me to radio astronomy which led me to move over to Kapteyn, and later on for helping with all our GMRT proposals, observations and what eventually became Chapter 5. Alex, Dipanjan and Geoff(rey) have always taken a keen interest in our work and chipped in with their insights in Chapters 2, 3. In particular, it was a pleasure working with Alex on Chapter 3. It was a pleasure meeting Pierre in person at Dwingeloo in one of the first conferences I attended and later on working with him on many of our observing proposals. It was also a great pleasure to collaborate with Reynier, Bjorn (Emonts) and Montse on Chapter 6. I enjoyed the time with Bjorn during his visit to Kapteyn when we discussed various results of common interest.
My sincere gratitude to Thijis, Françoise and Huib Jan, my reading committee members, for the time and effort invested in going through this thesis and the valuable comments.

Interactions with Filippo, Marisa, Francesco, Robert, Aleksandar, Bjorn (Adebahr) and Jeremy have been very instructive. I thank Filippo for the orientation sessions, for being a part of Chapter 4 and more recently, for his various Sardinian reminiscences. I worked closely with Robert on Chapter 2 and am extremely grateful for all the new insights he provided. Many thanks to him for making a very-reluctantly-made poster understandable which led to Geoff’s group getting involved in Chapter 2, and for making me a part of his numerous EVN proposals. He was an ideal postdoc for a PhD student like me to work with. I also thank Aleksandar for valuable advice on career paths in astronomy.

It was a great advantage to have Nika together in the learning process, some of the schools and courses, the scramblings to meet the related deadlines and the late-night slogs. I have always admired her strong personality and determination to stand up against injustice which showed itself in its entirety during the protests against the PhD scholarship experiment. Thanks also to her and Martha for pointing me to a reference for one of the propositions. Pranav and Luca joined the group at about the same time, although the latter only for a short project, and brought a very lively twist to our times together. Many, many little chats and serious discussions with Pranav about various aspects of our projects have been a lot of fun and very valuable at the same time. I have immensely appreciated his friendliness, easy-going nature and willingness to make himself available whenever needed.

Marc took me into the H I group at Kapteyn which proved to be educational in the initial few months. I have also benefitted from conversations with Thijs, Scott, Reynier and Harish. I also cherish the few moments spent with Renzo and Bob. I thank Mariano and Inga for being my mentors. My thanks to Marlies for many spontaneous tiny opportunities to help with the chores of the late-evening outreach activities. I am also very grateful to Leon (Koopmans) for being very considerate during the lockdown. A special mention here of Pratika, Manuela, Eline, Inga, Lingyu, Karina, Amina and Else whose presence at the institute was already sufficiently inspiring, let alone the interactions I have had with some of them from time to time.

Huug too, by his mere presence, inspired us. That he was in the office next to mine perhaps added a special touch to it. Right from my initial weeks until the last days before the institute became temporarily inaccessible due to the pandemic, I have had the good fortune to interact with him personally on numerous occasions. He was always interested in our work, the general well being, and always had a kind word for each of us. The memory of Huug passing through my field of view and smilingly pausing for just a moment to raise his mug in a very sweet greeting warms my heart even today.

Christa, Lucia, Martine, Maria and Ramona made life extremely smooth and added an entirely different flavour to the times at Kapteyn. I am especially grateful for their very warm consideration since the onset of the pandemic without which completing this thesis would have been infinitely harder. I warmly cherish all our sweet little chats at the almost-empty institute about everything from snow to environment to politics to holidaying to defending the thesis. Without them, Kapteyn would not have felt like home.

The computer group, Leon (Doddema), Eite and Martin, also have a large share in having made the PhD life easier. I especially thank Leon for the immediate attention he gave to my computer-related concerns and the hours he spent patiently fixing those issues.
I was very lucky for getting the warmest office at Kapteyn, both literally and figuratively. Being in an office into which the sun shines (clouds permitting) the whole day was most convenient. The figurative warmth is due to the wonderful people the office currently has and has had in the past. Initially, I found Jack’s VLBI wisdom, Alessandro’s logical tautologies, Zheng’s quiet interest in gaming, art and culture, and the icy presence of Alberta (the eternal inhabitant of Office 153) very welcoming. I cannot forget the times with Yanan, our pseudo officemate, working late nights at the institute. Then there was Shuaibo a fleeting visitor we happened to have for a couple of months just before the onset of the pandemic. The following summer saw Mark being around in the office for a short while.

The best time in the office was with Anqi and Ruslan with whom I shared the space the longest. While it was already wonderful to have another girl in the office, having Anqi was like icing on the cake. She always made herself available for numerous discussions about work which has been of great help all through. Our chats on culture, life and the world, in general, were also thoroughly enjoyable. Ruslan, with his simplicity, added colour to our times in Office 153. His knowledge of Indian songs had already baffled me when I had first met him during his interview. Later on, as officemates, all three of us have had various memorable moments sharing experiences, supporting each other, and playing Ruslan’s strange games such as Bean Bamboozled. I am extremely grateful to both of them for coming in at the right moment and being there each time there was a need.

Stefanie, the first (long-term) Dutch PhD student in our office in ages, could not have come at a better time. Her patience to endure and improve my broken Dutch and her wit made her company absolutely enjoyable during the last few adrenaline-dominant months of the thesis. I am grateful to her for happily taking upon herself the ordeal of translating my summary into Dutch. I have also found the company of Manuel, who came in just when I had one leg out of Kapteyn, very pleasant. I have always had something new to learn from our conversations on JWST and PhD life.

I am happy that Hyoyin and I decided to take part in the same edition of YERAC and hang out together, becoming friends. I admire her out-of-the-box perspective on everything, which, on numerous occasions, has shocked me out of my own less positive views.

I cherish my times with Jayatee ever since we met at the desolate institute in the dark winter more than a year ago. I thank Kevin, Kostas and Andrea for helping me navigate the bureaucracy of thesis defence easily. My thanks also to the fellow (and former) Kapteyners with whom I have had meaningful interactions from time to time: Aditya (Arabhavi), Akshara, Andrés, Anne, Antonino, Bharat, Christiana, Crescenzio, Danielle (Lucero), Davide (Massari and Punzo), Elaheh, Fangyou, Georg, Guilio, Hannah, Helmer, Jonas, Jorrit, Julia, Katya, Kelley, Kirill, Kristiina, Kyle, Laurent, Mpati, Nelvy, Nikki, Olmo, Pavel, Pooja, Samira, Sara, Seyda, Simon, Teymoor, Tirna, Umit and Valentina.

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Marti turned our office green, very patiently helped us maintain our green fingers, allowed me to accompany her on her trips to old book shops, kept an eye over me to make sure things are in order and essentially created a very homely feeling. My deep gratitude to her for all the concern, care and everything else. My thanks also to Marc and Marti for all the nice dinners,
social outings and for letting me care for their cat, Stip.

Stepping back a little, I fondly remember my time at NCRA with Meera, Shruti, Aditya, Minhajur, Nissim, Charley, Shushkie, Barnali, Atri, Biny, Sushma, Nayana, Peter, Surajit, Apurba, Gabriella, Omkar and Preetish. I also cannot stop without acknowledging all that I gained at IIST. The friends from the astro group Aneesha, Veena, Swagat, Sachin, Namitha, Ruskin, Joel, Jim, Varsha, Govind, Bikram, Rishabh and Ashish, and the faculty members Resmi, Anandmayee, Jagadheep, Sarita, Anand and Samir made that entire learning phase fruitful and memorable. I especially thank Resmi and Anandmayee for some of the most cherished and fun-filled moments. Two thick friends from those days Rajeswari and Maheswari have continued to stick along from two different continents on account of being too lazy to walk off; my infinite thanks to that laziness too.

Punya keeps disappearing ever so often, being driven uncontrollably by wanderlust, and lives for the rest of the time in a parallel universe. But her knack of appearing to give a push, a pat, a goad, or whatever is needed at the moment has been a true lifesaver over the last four years. The times we spent together singing, discussing, arguing and getting goosebumps over so many varied topics form some of my best, best moments in Groningen.

Cosmos had to work hard to get the absolutely unwilling Apu and me to talk. Despite taking the same flight from India, the same train to Groningen, starting at the university on the same (non-standard) day and belonging to institutes just a few steps apart, we spoke only at the strong urging of the IWCN receptionist in the first of the many appointments with the Dutch bureaucracy. Fortuitously, we were always one behind the other in the queue for all these appointments and enduring this ordeal together helped us transition quickly from being acquaintances to close friends. Avanti helped me with moving here, took care of my needs when I just landed and was my go-to person for everything in the initial days. How these individual friendships changed to us becoming a trio is vague. The late-night musings about the cobweb of complexes in the brain, the badminton weekends, the lunches, the wanderings around the campus and sometimes the city, the Dhanashree thillana, the heated arguments, the irritating improvisations of Avanti’s favourite songs, optimising our late-night instant Rava-idli snacks, Apu’s never-ending power naps at the institute, being there in weal and woe ... before I knew, friends had become family.

I perhaps should, but do not know how to acknowledge my family whom I cannot see as an entity separate from myself.

In most of my encounters with people of some greatness, I have keenly felt that they are great and I am small. Only a few rare personalities exude a sense of equality while being truly great. It is my greatest good fortune to have come in contact with many of this class without whose mention this piece would be incomplete. However, a mere word picture stands the risk of becoming gooey. An expression of gratitude to them is thus best left to stay beyond words.

It is hard to resist acknowledging the silent influence of the Netherlands, though. Here I saw the most beautiful night skies, heard the meteors whiz past, came across spectacular murmurations of starlings, witnessed the ocean eat up the land and give it back in a matter of several hours, and was mesmerised by the numerous different rainbows. The ever-changing day-length and the never-stable weather brought back to recollection more often than ever that I am riding on a planet going around a star, so are you, and so is everybody else...