

University of Groningen

Cosmological 21cm experiments

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Acknowledgments

SCENE: It's a nice, sunny day in Dwingeloo forest, and a rabbit is sitting outside his burrow, tippy-typing on his MacBook. Along comes a fox, out on a walk.

Fox: "What are you working on?" Rabbit: "My PhD thesis." Fox: "Hmm. What is it about?"

Rabbit: "Oh, I'm writing about how rabbits beat foxes." (incredulous pause)

Fox: "That's ridiculous! Any fool knows that rabbits don't beat foxes!" Rabbit: "Come with me, and I'll show you!"

They both disappear into the rabbit's burrow. (squeaking sounds) After a few minutes, the rabbit returns alone, and resumes typing on his MacBook. Soon a wolf comes along and stops to watch the hardworking rabbit.

Wolf: "What's that you are writing?" Rabbit: "I'm doing a PhD thesis on how rabbits beat wolves."

(loud guffaws) Wolf: "How dare you to publish such a thing?!" Rabbit: "Without any problem. Do you want to see why?"

The rabbit and the wolf go into the burrow. (squeaking sounds) After a few minutes, the rabbit returns together with a bear.

Bear: "Have I told you rabbit! It doesn't matter what is the topic of your PhD thesis. What does matter is that you have a good supervisor!"

Sincerely I thank

my supervisor and promotor prof. dr. Saleem Zaroubi,
promotors prof. dr. Léon Koopmans and prof. dr. Ger de Bruyn,

Dear Saleem,

I really enjoyed doing science and other interesting things with you during the last couple of years. You are a great supervisor, who knows how to motivate students, to direct them on the right way, and to push them when they are stuck. You are doing all of these with a great passion, knowing how to keep the right level of authority, but at the same time been very friendly and supportive. Thank you for having me as a summer student, for offering me the opportunity to come again to the Kapteyn Institute as a PhD student, and for involving me in an exciting project, the LOFAR-EoR experiment.

شكرا

Dear Leon and Ger,

I was really lucky not to have just one amazing supervisor, but three of them. Thank you for your unselfish support during my PhD, for your scientific advices and suggestions, and for having me in the LOFAR-EoR team.

Dank jullie wel!

members of the LOFAR-EoR team and collaborators,

It has been a great pleasure to be a part of an ambitious team that is “searching for a needle in a haystack”. Knowing the members of the team, currently achieved results, generous effort of each member towards one goal, and an inspiring working atmosphere, with the confidence I can say: “Yes, we can!”. Many thanks to: Michiel and Sarod, fellows that know a soul and every cell of the LOFAR system; Pandey Ji, our BBS expert; Gianni, our foreground observer, for very helpful scientific discussions and guidances; Geriant, a fellow that was so “annoyed” with my simulated foregrounds that he has developed an algorithm to remove them from the data, thanks a lot for polishing my papers both scientifically and linguistically; André, an RFI expert, vielen dank for translating my thesis summary to Dutch; Sanaz, our newcomer; and all other international and non-Groningen members, for their scientific support.

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people at the Kapteyn Astronomical Institute,

Kapteyn Institute is a great place both for studying and doing research. Its staff members are friendly and supportive, while about 20 nationalities make the atmosphere of the institute very colorful and vivid. It was really pleasant to do the PhD here. Therefore, thank you all.

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all of you, who have supported me on my way through the scientific world,

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Laura, a good friend, known as machi. Despite the fact that you are doing “Galactic stuff”, you fully integrated with us from the “EoR office” and added a new colour in our lives (of course pink). I think that is sooooo sweeeet. Thanks a lot for all fun that we had while eating pancakes with Nutella and forgive me for not allowing you to eat them before the last one is ready. Many thanks for supporting me when I really needed it.

Another good friend, my officemate, known as machaN or Panos. Your wave function finally collapsed in this sentence so I can thank you for being a real balkan friend. At the beginning, I really had difficulties to understand you, but when I have learned about the measurement equation, I have started to calibrate. Now, I can fully understand you even if you are not saying words. There has been many adventures moments and even more of them will come. Therefore, I will pick you up tomorrow and we go to Dwingy.

Actually, this is also the right place to thank Rajat, the ‘original’ macha and my officemate. Thank you a lot for patience while explaining me how to program in C, for polishing English of my papers and my thesis, for training me to eat spicy food, for introducing me to Panos (otherwise me and Panos would never talk to each other :D), and for all other crazy and funny moments. I forgive you for not being on my defense, but there is no excuse for Panos’ one! Remember: One for all-All for one!

my friends,

During my PhD, many of you made me feel alive in a many different ways. I thank you ALL for that with the words: “Life is like a heaven, when you have angles as your friends!”. I am sure, all of you will recognize yourself in those words, even without a ridiculous list with all the names :)!

However, I would like to mention a few of you from the Kapteyn Institute, with whom I had a great time: Simona, also girlish officemate, finally confess some things to yourself :P, there is nothing wrong with that; Koshy, now it is time to take a full advantage of life ;), Mark, thanks a lot for translations and good luck with “honey combs”; and finally Matteo, my first italian officemate, thanks for bearing with me all Rajat’s phone calls.

my family,

Mama, tata, Sonja, madam Curie, nana, baka, i dede, HVALA VAM na podršci koju ste mi pružili na putu do i tijekom doktorskog studija. Isto tako puno hvala obiteljima Korać i Graovac, Amanović, Jukić, Potočnik, Wagner, te Josi i Jeleni.

and Katarina, a cherry on top of the cake.

At the end of my PhD, when I did not expect, you just showed up and together we have changed our lives. Actually, why not?! Life is much more fun in two ;)!

At the end I would like to share with you my recipe for Groningen mustard soup, which you can enjoy while reading my thesis.

Groningen mustard soup

1 l water

2 chicken (or vegetable) bouillon cubes

3–4 tbsp *Zaansemosterd* (coarse ground mustard)

150 g *smeerkaas* (cheese spread)

150 g bacon

Cut the bacon into strips and fry in a frying pan until crisp. Allow to drain on kitchen paper.

Bring a pot with water and bouillon cubes to a boil. Once boiling, reduce the heat to simmer. Add mustard, stir well, and cook for 10 min. Add *smeerkaas*, whip with a whisk until smooth, and remove from fire. Add fried crispy bacon. Serve hot with a nice crusty bread.

Smakelijk eten!



Professor Balthazar
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Vibor Jelić
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