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Author: Franse, J.

Title: Hunting dark matter with X-rays

Issue Date: 2016-12-20

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PUBLICATIONS

Refereed Publications

Radial Profile of the 3.55 keV Line out to R_{200} in the Perseus Cluster

J. Franse, E. Bulbul, A. Foster, A. Boyarsky, M. Markevitch, M. Bautz, D. Iakubovskiy, M. Loewenstein, M. McDonald, E. Miller, S.W. Randall, O. Ruchayskiy, R.K. Smith, 2016, *Astrophys. J.*, **829**, 124.

Searching for Decaying Dark Matter in Deep XMM-Newton Observation of the Draco Dwarf Spheroidal

O. Ruchayskiy, A. Boyarsky, D. Iakubovskiy, E. Bulbul, D. Eckert, **J. Franse**, D. Malyshhev, M. Markevitch, A. Neronov, 2016, *Mon. Not. R. Astron. Soc.*, **460**, 1390.

Checking the Dark Matter Origin of a 3.53 keV Line with the Milky Way Center

A. Boyarsky, **J. Franse**, O. Ruchayskiy, D. Iakubovskiy, 2015, *Phys. Rev. Lett.*, **115**, 161301.

Unidentified Line in X-Ray Spectra of the Andromeda Galaxy and Perseus Galaxy Cluster

A. Boyarsky, O. Ruchayskiy, D. Iakubovskiy, **J. Franse**, 2014, *Phys. Rev. Lett.*, **113**, 251301.

Evolution of the Red Sequence Giant to Dwarf Ratio in Galaxy Clusters out to $z \sim 0.5$

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Comment on the Paper "Dark Matter Searches Going Bananas: the Contribution of Potassium (and Chlorine) to the 3.5 keV Line" by T. Jeltema and S. Profumo

A. Boyarsky, **J. Franse**, O. Ruchayskiy, D. Iakubovskiy, 2014, *arXiv:1408.4388*.

CURRICULUM VITAE

I was born on February 14 1988 in Maarssen. I can not really remember a time when I was not interested in space. It must have been during my early science courses at the ‘Christelijk Gymnasium’ in Utrecht that I was captivated specifically by the most fundamental things, large and small.

Studying astronomy had been pretty much inevitable since, which I went to do in Leiden after graduating from high school in 2006. I must have liked it there, because I would stay there for the next ten years. Taking a year off during my bachelor studies I was on the board of the student society ‘Catena’ and learned things I never would have in any lectures. I obtained my bachelor degree in astronomy in 2010, graduating on a project with Henk Hoekstra on the evolution of the giant-to-dwarf ratio of galaxy clusters.

Enrolling for the masters in astronomy, I took the cosmology track (obviously) and would be part of the first wave of graduates in this de Sitter program (quite unbeknownst to me until the graduation). The first project was with Simon Portegies Zwart and Koen Kuijken using N-body simulations of galaxies in an external gravitational field in order to judge the strength of some systematic effects on gravitational lensing shear and flexion measurements. The final project of my masters degree would turn out to be a lead-up to my PhD. Some of the ideas and methods for the correlation project described in this Thesis were tentatively explored under supervision of Alexey Boyarsky.

I graduated cum laude in 2012, immediately to be followed by starting my PhD with Alexey Boyarsky and Ana Achúcarro as a de Sitter fellow in cosmology. The plan starting out was to first develop the basic ideas from the masters thesis on using correlations to look for Dark Matter decay into a mature methodology with accompanying code. That project became lower priority in early 2014, when a potential decay signal was discovered in archival data of galaxies and galaxy clusters. That discovery resulted in three full chapters in this Thesis, with the last one being filled up, finally five years after the initial conception and with little time to spare, by the correlation method.

ACKNOWLEDGEMENTS

This thesis not only signifies the completion of my doctorate, but also the end of ten years at Leiden University. It has always been a great place to do and study astrophysics, and in ten years I've met a lot of great people at the institute and in Leiden, possibly too many to be able to express all my thanks to adequately on these few pages.

One of the things I appreciated most, was maybe the ease and politeness with which it was possible to have long and interesting discussions about so many topics ranging from science to politics and others. If I have spent more than 5 minutes talking to you, chances are you get my thanks for this. Thanks in particular to those who seemed the most willing (or unlucky) to humor me in this, Ricardo, David, Fabian, Massimo, Emanuelle (or should you be thanking me?), Henriette, Allison and Marcello.

Some people have been here as long as I have. Ricardo, we've trodden very similar paths here, shared many experiences during our studies, during conferences, and endured the inevitable hardships of a PhD student. Thank you for all that, the many conversations about science, politics and our careers, and dragging me along to the sports center.

Fabian, my thanks and appreciation for sharing in the 'de Sitter' journey. Being the first de Sitter fellows was an experience, thank you for your company at the many conferences and in organizing the journal clubs. Also thank you for disagreeing with me on so many political subjects over the years and the ensuing discussion.

Even though I had my office on the astronomy floors and didn't visit the second floor as often, I want to thank all the cosmology people at the Lorentz Institute - Wessel, Vicente, Valeri, Pablo, Kyrlo, Jesus, Bin, Bartosz, Artem, Andrii - for unerringly showing up at the journal clubs and participating eagerly. Bart and Yvette, thank you for taking over the organization of that journal club. To you and to Valeri and Dong-Gang all the best on your own de Sitter journeys. I also want to thank Antonella and Mark especially for the company during travels and conferences and the occasional spot of pleasant collaboration.

While on the subject of conferences, interestingly the astro-particle crowd from Amsterdam I've met more regularly abroad at conferences than in the Netherlands; Fabio, Richard, Michael, Sebastian, Hamish, Francesca, thank you as well for your company and insights.

Thanks to everyone from the Lensing group - Cristobal, Ricardo, Fabian, Marcello, Massimo, Margot, Marco, Remco, Jelte, Merijn, Maciej, Andrej, Martin, Christos, Vianni, Berenice and Elisabetta - for letting me join your meetings and discussions, even though I stopped doing lensing related things some time ago.

I would like to thank Alexey and Ana for their supervision and guidance in many aspects of academic life. I thank Dima, Oleg and Esra for the successful and pleasant collaborations. Koen and Henk, I want to thank for generously remaining available after

my bachelor and master projects for valuable discussions and the odd piece of needed advice.

For essential help regarding computing and software, administration made all the more esoteric by being part of two institutes at once, and organizational matters, the support staff of both the Observatory and the Lorentz Institute deserve my thanks; Marianne, Fran, Barry, David, Erik, Aart, Roland, Alexandra, Anita, Arianne, Evelijn, Liesbeth.

For keeping the soul healthy with company and amusement, in situations inside and outside the institute(s), there are many people to thank. For trips and outings, craft beer tastings, playing basketball, a solar eclipse cruise, drinks and dinners and much more. Thank you fellow PhD's and differently-titled colleagues, present and past; Mason and Henriette (for literally all of the above), Ricardo, Fabian, David, Emanuelle, Edwin, Cristobal, Leah, Eva, Niels, Marijke, Allison, Cameron, Nico, Christian, Chris, Mike, Mieke, Andrew, Aayush, Vincent, Margot, Clement, Francois, Kirsten, Stephanie, Gabi, Heather, Marco, Berenice, Tiffany, Marissa, Monica, Mattia, Jesse, Alex, Bart, Luke, Anna-Lea, Paula and to everyone else that I hope I didn't forget.

Ik wil mijn ouders bedanken voor hun voortdurende steun en aanmoediging, en voor hun voorbeeld, waardoor ik kritisch op mijzelf én blij met mijzelf kan zijn. Wat betreft het kritisch zijn op mij, bedank ik ook mijn zusje, die altijd het beste met mij voor heeft.

I want to thank Ann-Sofie for her invaluable support and understanding, I can only hope you can say the same of me in a few years.