

Osservatorio Astronomico di Trieste  
Istituto Nazionale di Astrofisica  
Via G.B. Tiepolo 11, 34143  
Trieste, Italy

## CURRICULUM VITAE

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### (1) Personal Data

**Name:** Villaescusa-Navarro, Francisco Antonio  
**Title:** Doctor in physics.  
**Born:** 7 August. 1984, Albacete, Spain.  
**Nationality:** Spanish.  
**Work address:** Osservatorio Astronomico di Trieste  
Via G.B. Tiepolo 11  
34143, Trieste, Italy  
**Email:** villaescusa@oats.inaf.it  
**Web Page:** <http://adlibitum.oats.inaf.it/villa/>  
**Phone (daytime):** [+39] 0403199235  
**Present Employment:** CosmolGM postdoctoral fellow  
Istituto Nazionale di Astrofisica /  
Osservatorio Astronomico di Trieste  
Trieste, Italy

### (2) Brief CV

#### Education

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**Jul. 08 - May. 12** Ph.D. in Physics, Valencia University, Spain.  
**Sep. 07 - Jul. 08** Master in advanced physics, Valencia University, Spain.  
**Sep. 02 - Jul. 07** Bachelor's Degree in Physics, Valencia University, Spain.  
Granted with Excellence Prize in 2007

## Academic and Professional Positions

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<b>Jul. 12 - present</b>	CosmoIGM postdoctoral fellow. (Trieste, Italy). Supervisor: Dr. Matteo Viel
<b>Jan. 08 - Jun. 12</b>	Ph.D. student. JAE predoctoral fellow.(Valencia, Spain). Supervisor: Dr. Carlos Peña-Garay
<b>Jul. 10 - Aug 11</b>	Visiting Graduate Student at Institute for Theory and Computation, Harvard-Smithsonian center for Astrophysics (Cambridge, USA). Supervisor: Prof. Abraham Loeb
<b>Sep. 09 - Dec 09</b>	Visiting Graduate Student at Canadian Institute for Theoretical Astrophysics (Toronto, Canada). Supervisor: Prof. Neal Dalal
<b>Sep. 07 - Dec. 07</b>	Research Collaborator of the CSIC, Consejo Superior de Investigaciones Cientificas, IFIC, Valencia. Supervisors: Prof. Jose Navarro-Salas & Dr. Carlos Peña-Garay
<b>Jan. 07 - Jun. 07</b>	Research Collaborator for the Spanish Department of Education and Science, Valencia, Spain.
<b>Aug. 06 - Sep. 06</b>	Summer training in Kaon experiment (Mainz, Germany). Supervisors: Dr. Salvador Sanchez & Prof. Patrick-Achenbach

## Major Fields of Research

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<b>Cosmology &amp; Astrophysics</b>	The impact of neutrino masses on cosmology. The Large Scale Structure of the universe. 21cm cosmology. The InterGalactic Medium. Galaxy formation and evolution. Gravity Modifications.
<b>Planetary physics</b>	Formation, evolution and detection of outer planetary systems.

## Computational skills

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<b>Systems</b>	Mac, Linux, Windows.
<b>Programming</b>	Fortran, C/C++, IDL, MPI, OpenMP. Python: numpy, scipy, mpi4py, weave, PyCUDA
<b>Plotting</b>	GNUPlot, matplotlib.
<b>Cosmological Codes</b>	CAMB, GADGET, N-GenIC.

## Professional activities

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<b>Referee</b>	Monthly Notices of the Royal Astronomical Society. Physics Review D
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### (3) Talks, and Conferences/Workshops/Schools Participation

#### Talks

	<b>Date(s)</b>	<b>Title and place</b>
2015	<b>February 18:</b>	<i>"21cm cosmology: modeling the neutral hydrogen distribution in the post-reionization era"</i> , Brera astronomical observatory, Merate, Milan, Italy.
2015	<b>February 3:</b>	<i>"Cosmology with neutral hydrogen"</i> , 5th Hydrosim meeting, Trieste, Italy.
2015	<b>January 16:</b>	<i>"The impact of massive neutrinos on the large scale structure of the Universe"</i> , Beyond $\Lambda$ CDM conference, Oslo, Norway.
2014	<b>December 8:</b>	<i>"Report on validation GC"</i> , Euclid meeting, Paris, France.
2014	<b>September 10:</b>	<i>"Small scale structures and neutrino masses"</i> , Neutrino Oscillation Workshop, Conca Specchiulla, Otranto, Lecce, Italy.
2014	<b>August 20:</b>	<i>"Modeling the distribution of neutral hydrogen in the high redshift universe: intensity mapping"</i> , Workshop on Cosmology from Baryons at High Redshift, Trieste, Italy.
2014	<b>June 27:</b>	<i>"Modeling the distribution of neutral hydrogen in the high redshift universe: intensity mapping"</i> , Arecibo Observatory, Arecibo, Puerto Rico, USA.
2014	<b>January 10:</b>	<i>"Impact of massive neutrinos on the large scale structure of the universe"</i> , La Trobada, IFIC, Valencia, Spain.
2013	<b>October 14:</b>	<i>"Impact of massive neutrinos on the clustering properties of dark matter halos and galaxies"</i> , Dark side of the universe: IX international workshop, Trieste, Italy.
2013	<b>October 11:</b>	<i>"Clustering properties in cosmologies with massive neutrinos"</i> , Workshop on Galaxy Bias, Trieste, Italy.
2013	<b>September 24 :</b>	<i>"The impact of massive neutrinos on the halo bias"</i> , 4rd Hydrosim Meeting, Trieste, Italy.
2013	<b>January 11 :</b>	<i>"Neutrino simulations"</i> , 3rd Hydrosim Meeting, Trieste, Italy.
2012	<b>December 4:</b>	<i>"The Non-linear evolution of the neutrino cosmic background"</i> , ICTP seminar, Trieste, Italy.
2012	<b>April 18 :</b>	<i>" The impact of neutrino masses on cosmology"</i> , OATS seminar, Trieste, Italy.
2011	<b>January 27 :</b>	<i>"The effect of neutrinos in cosmological voids"</i> , Cosmole meeting, Valencia, Spain.
2010	<b>February 4 :</b>	<i>"Cores in warm dark matter models"</i> , Valencia, Spain.
2009	<b>April 8 :</b>	<i>"Gravitational clustering of neutrinos in galaxy clusters"</i> , Valencia, Spain.
2006	<b>September 25:</b>	<i>"Progress on K1 experiment"</i> , Mainz, Germany.

## Schools and Workshops Participation

	<b>Date(s)</b>	<b>Title and place</b>
2015	<b>January 13-17:</b>	<i>"Beyond <math>\Lambda</math>CDM conference"</i> , Oslo, Norway.
2014	<b>September 7-14:</b>	<i>"Neutrino Oscillation Workshop"</i> , Conca Specchiulla, Otranto, Lecce, Italy.
2014	<b>August 18-21:</b>	<i>"Workshop on Cosmology from Baryons at High Redshift"</i> , ICTP, Trieste, Italy.
2013	<b>December 17-19:</b>	<i>"Euclid OU-LE3 meeting"</i> , Nice, France.
2013	<b>October 14-17:</b>	<i>"Dark side of the universe: IX international workshop"</i> , Trieste, Italy.
2013	<b>October 8-11:</b>	<i>"Workshop on Galaxy Bias: Non-linear, Non-local and Non-Gaussian"</i> , Trieste, Italy.
2013	<b>September 23-25:</b>	<i>"4rd Hydrosim Meeting"</i> , Trieste, Italy.
2013	<b>March 11-13:</b>	<i>"Galaxy Mocks for Cosmology Workshop"</i> , Barcelona, Spain.
2013	<b>January 10-11:</b>	<i>"3rd Hydrosim Meeting"</i> , Trieste, Italy.
2010	<b>February 24-26:</b>	<i>"Fisher matrix forecasts and the icosmo package"</i> , by Tom Kitching, Valencia, Spain.
2010	<b>January 12-15:</b>	<i>"N-body simulations"</i> , by Christian Wagner, Barcelona, Spain.
2008	<b>July 15-31:</b>	<i>"Summer School in Cosmology"</i> , Trieste, Italy.
2007	<b>December 15-20:</b>	<i>"Physics of the Accelerating Universe academic training"</i> , Madrid, Spain.

## (4) Referees

- 1) **Prof. Neal Dalal.** University of Illinois at Urbana-Champaign, Urbana, IL, USA (dalaln@illinois.edu).
- 2) **Prof. Abraham Loeb.** Institute for Theory and Computation, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA (aloeb@cfa.harvard.edu).
- 3) **Dr. Jordi Miralda-Escudé.** Institut de Ciències del Cosmos. Barcelona, Spain (jordi.miralda@gmail.com).
- 4) **Dr. Carlos Peña-Garay.** Instituto de Fisica Corpuscular. Valencia, Spain (penya@ific.uv.es).
- 5) **Dr. Matteo Viel.** Osservatorio Astronomico di Trieste.

Trieste, Italy (viel@oats.inaf.it).

# PUBLICATIONS

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- 1. Cross-correlating 21cm intensity maps with Lyman Break Galaxies in the post-reionization era**  
By [Francisco Villaescusa-Navarro](#), Matteo Viel, David Alonso, Kanan K. Datta, Philip Bull, Mario G. Santos  
October 2014, 23 pp. [e-Print Archive: astro-ph/1410.7393]  
Submitted to JCAP
- 2. The halo model in a massive neutrino cosmology**  
By Elena Massara, [Francisco Villaescusa-Navarro](#), Matteo Viel  
October 2014, 28 pp. [e-Print Archive: astro-ph/1410.6813]  
Published on JCAP, 12, 53, (2014)
- 3. Semi-Analytic Galaxy Formation in Massive Neutrinos Cosmologies**  
By Fabio Fontanot, [Francisco Villaescusa-Navarro](#), Davide Bianchi, Matteo Viel  
September 2014, 8 pp. [e-Print Archive: astro-ph/1409.6309]  
MNRAS Accepted
- 4. A coarse grained perturbation theory for the Large Scale Structure, with cosmology and time independence in the UV**  
By Alessandro Manzotti, Marco Peloso, Massimo Pietroni, Matteo Viel, [Francisco Villaescusa-Navarro](#)  
July 2014, 37 pp. [e-Print Archive: astro-ph/1407.1342]  
Published on JCAP, 09, 47, (2014)
- 5. VIDE: The Void IDentification and Examination toolkit**  
By P. M. Sutter, Guilhem Lavaux, Nico Hamaus, Alice Pisani, Benjamin D. Wandelt, Michael S. Warren, [Francisco Villaescusa-Navarro](#), Paul Zivick, Qingqing Mao, Benjamin B. Thompson  
June 2014. 9 pp. [e-Print Archive: astro-ph/1406.1191]  
Published on Astronomy & Computing
- 6. Modeling the neutral hydrogen distribution in the post-reionization universe: intensity mapping**  
By [Francisco Villaescusa-Navarro](#), Matteo Viel, Kanan K. Datta and T. Roy Choudhury  
May 2014. 45 pp. [e-Print Archive: astro-ph/1405.6713]  
Published on JCAP, 09, 50, (2014)
- 7. Constraining Warm Dark Matter with high-z supernova lensing**  
By Stefania Pandolfi, Carmelo Evoli, Andrea Ferrara and [Francisco Villaescusa-Navarro](#)  
Mar 2014. 7 pp. [e-Print Archive: astro-ph/1403.2185]  
Published on MNRAS, 442, 13, (2014)
- 8. Cosmic Degeneracies I: Joint N-body Simulations of Modified Gravity and Massive Neutrinos**  
By Marco Baldi, [Francisco Villaescusa-Navarro](#), Matteo Viel, Ewald Puchwein, Volker Springel and Lauro Moscardini  
Nov 2013. 14 pp. [e-Print Archive: astro-ph/1311.2588]  
Published on MNRAS, 440, 75, (2014)

9. **Cosmology with massive neutrinos III: the halo mass function and an application to galaxy clusters**  
By Matteo Costanzi, [Francisco Villaescusa-Navarro](#), Matteo Viel, Jun-Qing Xia, Stefano Borgani, Emanuele Castorina and Emiliano Sefusatti.  
Nov 2013. 20 pp. [e-Print Archive: astro-ph/1311.1514]  
Published on JCAP, 12, 012, (2013)
10. **Cosmology with massive neutrinos II: on the universality of the halo mass function and bias**  
By Emanuele Castorina, Emiliano Sefusatti, Ravi K. Sheth, [Francisco Villaescusa-Navarro](#) and Matteo Viel.  
Nov 2013. 21 pp. [e-Print Archive: astro-ph/1311.1212]  
Published on JCAP, 02, 049, (2014)
11. **Cosmology with massive neutrinos I: towards a realistic modeling of the relation between matter, haloes and galaxies**  
By [Francisco Villaescusa-Navarro](#), Federico Marulli, Matteo Viel, Enzo Branchini, Emanuele Castorina, Emiliano Sefusatti and Shun Saito.  
Nov 2013. 35 pp. [e-Print Archive: astro-ph/1311.0866]  
Published on JCAP, 03, 011, (2014)
12. **Non-linear evolution of the cosmic neutrino background**  
By [Francisco Villaescusa-Navarro](#), Simeon Bird, Carlos Peña-Garay and Matteo Viel.  
Dec 2012. 24 pp. [e-Print Archive: astro-ph/1212.4855]  
Published on JCAP, 03, 019, (2013)
13. **Neutrino Signatures on the High Transmission Regions of the Lyman-alpha Forest**  
By [Francisco Villaescusa-Navarro](#), Mark Vogelsberger, Matteo Viel and Abraham Loeb.  
Jun 2011. 9 pp. [e-Print Archive: astro-ph/1106.2543]  
Published on MNRAS, 431, 3670, (2013)
14. **Neutrino Halos in Clusters of Galaxies and their Weak Lensing Signature**  
By [Francisco Villaescusa-Navarro](#), Jordi Miralda-Escudé, Carlos Peña-Garay and Vicent Quilis.  
Apr 2011. 13 pp. [e-Print Archive: astro-ph/1104.4770]  
Published on JCAP, 06, 027, (2011)
15. **Signatures of photon and axion-like particle mixing in the gamma-ray burst jet**  
By Olga Mena, Soebur Razzaque and [Francisco Villaescusa-Navarro](#).  
Jan 2011. 16 pp. [e-Print Archive: astro-ph/1101.1903]  
Published on JCAP, 02, 030, (2011)
16. **Cores and cusps in warm dark matter halos**  
By [Francisco Villaescusa-Navarro](#) and Neal Dalal.  
Oct 2010. 16 pp. [e-Print Archive: astro-ph/1010.3008]  
Published on JCAP, 03, 024, (2011)