

Personal Information

Name: Victor Hugo Robles

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Education

Bachelor's Degree in Physics and Mathematics from IPN	2005-2009
Master's Degree in Physics from CINVESTAV IPN México D.F, Advisor Tonatiuh Matos Chassin Title "Problems and Alternatives to Λ CDM"	2009-2011
Ph. Degree in Physics from CINVESTAV México D.F. Advisor Tonatiuh Matos Chassin Title "Comparing the latest galaxy observations with current dark matter models"	2011-2015
Postdoctoral position in University of California, Irvine, CA, USA Collaboration: Prof. James S: Bullock	2015-2017

Teaching Experience

Teaching Practice of English at the Teacher Training Course at the Anglo part of The Anglo Mexican Foundation, A.C.

Teaching Assistant, "Mathematical Methods I", CINVESTAV IPN Aug.-Dec. 2010

Teaching Assistant, "Statistical Physics", CINVESTAV IPN Aug.-Dec. 2014

Teaching Assistant, "Mathematical Methods", CINVESTAV IPN Jan. -Mar. 2015

Research collaboration

Research visit at University of California, Irvine, USA Feb.-July 2014
Collaboration with Prof. James S. Bullock.

Research visit at Astronomisches Rechen-Institut (ARI), Heidelberg, Germany. Sep. 1 – 15 2015
Collaboration with Dr. Veronica Lora

Research visit at Caltech, Pasadena, USA Mar.-May 15-30 2015
Collaboration with Prof. Philip Hopkins

Press Releases

A) NASA/Chandra Press Release

Is Dark Matter Fuzzy?

Collaboration with Tula Bernal and Tonatiuh Matos

<http://chandra.harvard.edu/blog/node/642>

B) Visualization for a press release related to Kapteyn star

Collaboration with James Bullock and Miguel Rocha from UC Irvine and Joel Primack from University of California - Santa Cruz.

<http://ph.qmul.ac.uk/ancient-worlds-around-kapteyns-star>

Awards

TELMEX Foundation scholarship	2006-2009
CONACYT scholarship for Masters Program	2009-2011
CONACYT scholarship for Ph.D. in Physics	2011-2015
CONACYT international postdoctoral scholarship	2015-2016
UCMEXUS-Postdoctoral Fellowship	2016-2017
Prize Arturo Rosenblueth 2016 for best Ph.D thesis in Exact and Natural Sciences	2016

Referee in the following journals

Monthly Notices of the Royal Astronomical Society (MNRAS)

Astronomy and Astrophysics (A&A)

Research in Astronomy and Astrophysics (RAA)

Computational skills

High performance N-body simulations in GADGET 2 and GIZMO

Hydrodynamical simulations with FIRE (Feedback In Realistic Environments)

Member of the FIRE (Feedback In Realistic Environments) project

Programming languages

Python, C, Mathematica

Software

Latex, Yt (Visualization and data analysis software), Office suite, Photoshop

Publication List

Link to publications: https://arxiv.org/find/astro-ph/1/au:+Robles_V/0/1/0/all/0/1

First Author papers:

- 1) "Flat Central Density Profile and Constant DM Surface Density in Galaxies from Scalar Field Dark Matter", **Victor H. Robles** and T. Matos, MNRAS, 422, 2012, 282-289
- 2) "Exact Solution to Finite Temperature SFDM: Natural Cores without Feedback", **Victor H. Robles**, T. Matos, published in *Astrophys. J.*, 763, 2013, 19
- 3) "Strong Lensing with Finite Temperature Scalar Field Dark Matter" **Victor H. Robles**, T. Matos, 2013, *Phys.Rev. D*88, 2013, 083008
- 4) "Finite Temperature Density Profile in SFDM" **Victor H. Robles**, T. Matos, 2013. Published in *Sources and Detection of Dark Matter and Dark Energy in the Universe*, Ed. David Cline, Springer Proceedings in Physics, Vol. 148, Springer Netherlands, 2013, pp. 17-24.
- 5) "Evolution of a dwarf satellite galaxy embedded in a scalar field dark matter halo" **Victor H. Robles**, V. Lora, T. Matos, F.J. Sanchez-Salcedo., 2014, arXiv:1404.3424, *The Astrophysical Journal*, 810, Issue 2, 2015, article id. 99, pp. 11
- 6) "SFDM: A new formation mechanism of tidal debris" **Victor H. Robles**, L.A. Martinez-Medina , T. Matos, 2015, arXiv:1503.00799
- 7) "SIDM on FIRE: Hydrodynamical Self-Interacting Dark Matter simulations of low mass dwarf galaxies", **Victor H. Robles**, James S. Bullock, Oliver D. Elbert, Alex Fitts, Alejandro González-Samaniego, Michael Boylan-Kolchin, Philip F. Hopkins, Claude-André Faucher-Giguère, Dušan Kereš, Christopher C. Hayward, 2017, arXiv:1706.07514 (accepted in MNRAS)

Co-author papers:

- 8) "A brief Review of the Scalar Field Dark Matter model", Juan Magaña, T. Matos, **Victor H. Robles**, Abril Suárez, 2012, arXiv:1201.6107
- 9) "A Review on the Scalar Field Bose-Einstein Condensate Dark Matter Model" Abril Suarez, **Victor H. Robles**, Tonatiuh Matos, In: *Accelerated Cosmic Expansion*. Ed. By Claudia Moreno González, José Edgar Madriz Aguilar, and Luis Marina Reyes Barrera. *Astrophysics and Space Science Proceedings*, Vol. 38, Springer International Publishing, 2014, pp. 107-142.

- 10) “Dwarf galaxies in multistate Scalar Field Dark matter haloes” L. A. Martinez-Medina, **V. H. Robles**, T. Matos, 2014, Physical Review D, 2015, 91, Issue 2, 023519
- 11) “Scalar Field (Wave) Dark Matter”, T. Matos and **Victor H. Robles**, 2016, arXiv:1601.01350, Proceedings of the Fourteenth Marcel Grossman Meeting on General Relativity.
- 12) “Scalar field dark matter in clusters of galaxies”, Tula Bernal, **Victor H. Robles**, Tonatiuh Matos, 2017, MNRAS 468, 3135-3149
- 13) “Feedback first: the surprisingly weak effects of magnetic fields, viscosity, conduction, and metal diffusion on galaxy formation”, Kung-Yi Su, Philip F. Hopkins, Christopher C. Hayward, Claude-André Faucher-Giguere, Dusan Keres, Eliot Quataert, Xiangcheng Ma, **Victor H. Robles**, 2017, arXiv:1607.05274, MNRAS, 471, Issue 1, 144
- 14) “The mass discrepancy-acceleration relation: a universal maximum dark matter acceleration and implications for the ultra-light scalar field dark matter model”, L. Arturo Ureña-López, **Victor H. Robles**, T. Matos, 2017, arXiv:1702.05103, Physical Review D, 2017, 96, 043005
- 15) “Galaxy Formation with BECDM: I. Turbulence and relaxation of idealised haloes”, Philip Mocz, Mark Vogelsberger, **Victor Robles**, Jesus Zavala, Michael Boylan-Kolchin, Lars Hernquist, 2017, arXiv:1705.05845 MNRAS, 2017,471, 4559

Participation in Congresses

- VIII WORKSHOP DGFM-SMF. Talk titled: “Is it really needed to modify the standard model of cosmology? Held from November 22-26, 2010, in Tuxtla Gutierrez Chiapas, Mexico
- 19th International Conference on General Relativity and Gravitation held from July 5-9, 2010 in Mexico City, Mexico.
- Symposium "Symmetries and Phases in the Universe", Kloster Irsee, Germany, February 27- March 1st 2012 poster “Phase transition of the Scalar Field Dark Matter model and its hydrodynamical evolution equation.”
- Cosmology on the Beach 2012, Cancún, Mexico, January 16-20, 2012. Poster title: “Flat Central Density Profile and Constant DM Surface Density in Galaxies from Scalar Field Dark Matter”.
- IAU XXVIII General Assembly session “Galaxy Evolution through secular processes”, Beijing, China, August 20-24 2012, Poster “Galaxy rotation curves from finite temperature SFDM”.
- COSMO 12, Beijing, China, September 10-14 2012. Talk “Exact Solution to finite temperature SFDM: Natural cores without feedback”.

- International Conference on Particle Physics and Cosmology-COSMO 2013, Cambridge, UK September 2-6, 2013, Talk: “Finite Temperature Scalar Field haloes and strong gravitational lensing constrains”.
- Encuentros Relativistas Españoles, Benasque, Spain. September 8-12 2013. Talk: ”Properties of scalar field dark matter halos”.
- SCALARS 2013, Warsaw, Poland, September 12-16 2013. Talk:”Rotation Curves from finite temperature scalar field dark matter”.
- Seventh Aegean Summer School, Paros, Greece, September 23-28. Talk: “Dark matter halos in the scalar field DM model”.
- 27th Texas Symposium on Relativistic Astrophysics, Dallas,USA, December 8-13, 2013, Talk: “Finite Temperature Scalar Field dark matter haloes”.
- Summer school on Cosmology, Trieste, Italy, August 4-15 2014.
- Workshop on Cosmology from baryons at high redshift, Trieste, Italy, August 18-21 2014.
- 11th Potsdam Thinkshop: Satellite galaxies and dwarfs in the local group, Potsdam, Germany, August 25-29, 2014, Poster “Supernova feedback in dwarf SIDM halos”
- The 6th KIAS workshop on cosmology and structure formation. Seoul, Korea, November 3-7 2014. Talk “Dwarf galaxy observations as a test to CDM and SIDM model’s predictions”
- Invited talk in KIAS, Seoul, Korea, November 11, 2014. Title “Constraints on scalar field dark matter from cosmological observables”
- IAU XXIX General Assembly Honolulu, Hawaii, August 3-14 2015, Poster: Observational consequences in galactic scales of the scalar field dark matter paradigm”.
- Essential Cosmology for the Next Generation, Cancún, Mexico, January 10-16 2016.
- The 32nd IAP Colloquium, Paris, France June 20-24 2016, Poster: “Impact of the UV background in SIDM/CDM dwarf galaxies”.
- 66th Lindau Nobel Laureate Meeting, Lindau, Germany, June 26- July 1 2016. Invited participation.
- European Week of Astronomy and Space Science Athens, Greece July 4-8 2016, Talks: 1) “Testing the cold dark matter model with cluster mass distribution” 2) “Using the strong lensing and the Einstein radius to infer dark matter distribution in the SFDM model”.
- The 21st International Conference on General Relativity and Gravitation, New York, USA, July 10-15 2016. Talk: “Constraining the mysterious dark matter with recent cosmological and galactic observations”.
- Seminar talk in the astrophysics group at Princeton, New Jersey, USA, July 2016, “Setting self-Interacting dark matter on FIRE”.
- Invited talk at the CfA Harvard-Smithsonian, Cambridge, USA, July 2016, Talk: “Setting self-Interacting dark matter on FIRE”.
- 13th Asian-Pacific Regional IAU Meeting, Taipei, Taiwan, July 3-7, 2017, Talk: SIDM on FIRE: Self-Interacting Dark Matter simulations of dwarf galaxies with

Feedback In Realistic Environments. Also Poster: “Observational consequences of ultra-light scalar field (Wave) dark matter”

- 13th Rencontres du Vietnam: Exploring the Dark Universe, Quy Nhon, Vietnam, July 23-29, 2017, Talk: “SIDM on FIRE: Self-Interacting Dark Matter simulations of dwarf galaxies with Feedback In Realistic Environments”
- 2017 Santa Cruz Galaxy Workshop, Santa Cruz, USA, August 7-11 2017, Talk: “Testing fuzzy and self-interacting DM models with simulations of dwarf galaxies”
- Talk at Stanford KiPAC seminar, CA, USA, Sep. 12, 2017. Talk: “Towards a deeper understanding of DM using FIRE astrophysics”

Languages spoken

Spanish (mother tongue)

English (First Certificate in English)

French (*Diplôme d'Etudes en Langue Française* (DELF) B2)

German (A1)

References

Dr. Tonatiuh Matos Chassin

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