TOMAS ALBERTO CASSANELLI

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EDUCATION

January 2018 - Present **Astronomy & Astrophysics PhD candidate**. University of Toronto, Canada.

October 2015 - October 2017 **Astrophysics Master of Science**. Universität Bonn and Max-Planck-Institut für Radioastronomie, Germany.

March 2009 - January 2015 **Civil Industrial Engineering with a Major in Mechanics**. Universidad de La Frontera, Chile.

August 2010 - August 2014 **Applied Physics Bachelors Degree**. Universidad de La Frontera, Chile.

AWARDS

2018 "Verein der Freunde und Förderer des Max-Planck-Institut für Radioastronomie e.V." Master of science thesis annual award, Germany. Three referees delivered the judgement: *excellent*.

2017 Becas Chile (CONICYT/ANID): "Becas doctorado en el extranjero 2017" complete funding for up to four years in a foreign PhD program. Government of Chile.

2010, 2011 and 2012 Excellence Academic Award. Universidad de La Frontera, Chile.

THESES

2022 **Astronomy & Astrophysics Doctoral thesis**: Fast Radio Burst localization with Very Long Baseline Interferometry. University of Toronto, Canada.
Supervisor: Dr. Keith Vanderlinde.

2017 **Astronomy & Astrophysics MSc thesis**: Systematic measurements of the surface of the 100-m radio telescope using the out-of-focus holography method. Max-Planck-Institut für Radioastronomie, Germany.
Supervisor: Dr. Karl Menten.

2015 **Civil Engineering thesis**: Análisis de las vibraciones en instrumentación de observación astronómica generadas durante operaciones de transporte. Atacama Large Millimeter/submillimeter Array (ALMA), Chile.
Supervisor: Mechanical Engineer Armin Silber (ESO Cryogenics) and Dr. Juan Möller (Universidad de La Frontera).

RESEARCH EXPERIENCE

November 2017 - December 2017 Part time scientist: Out-of-focus holography at the Effelsberg telescope. Max-Planck-Institut für Radioastronomie, Germany.

September 2016 - October 2016 Internship: A new method to determine a pulsar period: the PCA Waterfall. Department of Information Engineering, Università di Padova, Italy.
Supervisor: Dr. Giampiero Naletto.

July 2016 - August 2016 Internship: Angular momenta in dark matter subhalos (simulation). Argelander Institut für Astronomie, Universität Bonn, Germany.
Supervisor: Dr. Cristiano Porciani.

January 2015 - March 2015 Internship: Photometry of three cataclysmic variables. Cerro Tololo Inter-American Observatory (CTIO), Chile.
Supervisor: Dr. Tim Abbott.

February 2014 - March 2014 Project: Amplitude calibration device graphic user interface. ALMA, Chile.
Supervisor: Electronic Engineer Jaime Guarda.

May 2012 - December 2013 Project: Condensed matter physics and statistical physics: percolation of discrete sites. Universidad de La Frontera, Chile.
Supervisor: Dr. Eugenio Vogel.

SUBMITTED/ACCEPTED PUBLICATIONS

2021 **Cassanelli, Tomas** et al. Localizing FRBs through VLBI with the Algonquin Radio Observatory 10-m Telescope, submitted to The Astronomical Journal.

2021 Chawla, P. et al, incl. **Cassanelli, Tomas**. Modeling Fast Radio Burst Dispersion and Scattering Properties in the First CHIME/FRB Catalog, submitted to The Astrophysical Journal.

2021 The CHIME/FRB Collaboration et al, incl. **Cassanelli, Tomas**. Sub-second periodicity in a fast radio burst, submitted to Nature.

2021 Mckinven, Ryan et al, incl. **Cassanelli, Tomas**. A Polarization Pipeline for Fast Radio Bursts Detected by CHIME/FRB, submitted to The Astrophysical Journal.

2021 The CHIME/FRB Collaboration et al, incl. **Cassanelli, Tomas**. The First CHIME/FRB Fast Radio Burst Catalog, submitted to The Astrophysical Journal.

2021 Rafiei-Ravandi, Masoud et al, incl. **Cassanelli, Tomas**. CHIME/FRB Catalog 1 results: statistical cross-correlations with large-scale structure, submitted to The Astrophysical Journal.

2021 Josephy, A. et al, incl. **Cassanelli, Tomas**. No Evidence for Galactic Latitude Dependence of the Fast Radio Burst Sky Distribution, submitted to The Astrophysical Journal.

2021 Pleunis, Ziggy et al, incl. **Cassanelli, Tomas**. Fast Radio Burst Morphology in the First CHIME/FRB Catalog, submitted to The Astrophysical Journal.

2021 Nimmo, K. et al, incl. **Cassanelli, Tomas**. Burst timescales and luminosities link young pulsars and fast radio bursts, submitted to Nature.

2021 Kirsten, F. et al, incl. **Cassanelli, Tomas**. A repeating fast radio burst source in a globular cluster, submitted to Nature.

REFEREED PUBLICATIONS

2021 Michilli, D. et al, incl. **Cassanelli, Tomas**. An Analysis Pipeline for CHIME/FRB Full-array Baseband Data, The Astrophysical Journal.

2021 Bhardwaj, M. et al, incl. **Cassanelli, Tomas**. A Nearby Repeating Fast Radio Burst in the Direction of M81, The Astrophysical Journal.

2021 Pleunis, Z. et al, incl. **Cassanelli, Tomas**. LOFAR Detection of 110-188 MHz Emission and Frequency-dependent Activity from FRB 20180916B, The Astrophysical Journal.

2021 Leung, Calvin et al, incl. **Cassanelli, Tomas**. A Synoptic VLBI Technique for Localizing Nonrepeating Fast Radio Bursts with CHIME/FRB, The Astronomical Journal.

2020 CHIME/FRB Collaboration et al, incl. **Cassanelli, Tomas**. A bright millisecond-duration radio burst from a Galactic magnetar, Nature.

2020 Scholz, P. et al, incl. **Cassanelli, Tomas**. Simultaneous X-Ray and Radio Observations of the Repeating Fast Radio Burst FRB 180916.J0158+65, The Astrophysical Journal.

2020 Chawla, P. et al, incl. **Cassanelli, Tomas**. Detection of Repeating FRB 180916.J0158+65 Down to Frequencies of 300 MHz, The Astrophysical Journal.

2020 Fonseca, E. et al, incl. **Cassanelli, Tomas**. Nine New Repeating Fast Radio Burst Sources from CHIME/FRB, The Astrophysical Journal.

2020 Marcote, B. et al, incl. **Cassanelli, Tomas**. A repeating fast radio burst source localized to a nearby spiral galaxy, Nature.

2019 CHIME/FRB Collaboration et al, incl. **Cassanelli, Tomas**. CHIME/FRB Discovery of Eight New Repeating Fast Radio Burst Sources, The Astrophysical Journal.

2019 CHIME/FRB Collaboration et al, incl. **Cassanelli, Tomas**. A second source of repeating fast radio bursts, Nature.

CONFERENCE TALKS

28 July–5 August 2021 Fast Radio Bursts 2021 (FRB2021). Online format. First VLBI localization of a single-burst FRB with the CHIME/FRB Outrigger testbed ARO 10-m.

6–9 July 2020 Fast Radio Bursts 2020 (FRB2020). Online format. FRB localization efforts with VLBI in collaboration with CHIME/FRB.

9–11 December 2019 Science at Low Frequencies (SALF). Arizona State University, Tempe, Arizona, USA. Fast Radio Burst Localization with VLBI.

17–20 June 2019 Canadian Astronomical Society (CASCA) Annual Meeting. McGill University, Montreal, Canada. VLBI Efforts in support of CHIME/FRB.

20–21 February 2018 Effelsberg Science Workshop Max-Planck-Institut für Radioastronomie, Germany. Systematic measurements of the surface of the 100-m radio telescope using the Out-of-focus holography method.

23–24 January 2014 Third Cycle of Cosmology, Gravitation and Quantum Field Theory. Universidad de La Frontera, Chile. Presenting Gross-Neveu model.

5–6 December 2013 Magnetism and Statistical Physics. Universidad de La Frontera, Chile. Presenting percolation through silver nano-particles.

CONFERENCE PROCEEDINGS

2016 **Cassanelli, Tomas** and Abbott, Tim. Photometry of the old nova HZ Pup, American Astronomical Society Meeting Abstracts 227.

CONFERENCE POSTERS

26–28 November 2014 Sociedad Chilena de Física (Chilean Physics Society). Universidad de Concepción, Chile. Presenting percolation through silver nano-particles.

27–29 October 2013 Chile-Mexico V Workshop on Magnetism, Nanosciences and their applications. Los Ándes, Chile. Presenting percolation through silver nano-particles.

LECTURING EXPERIENCE

7–12 July 2019 Dunlap Instrumentation Summer School. Lead lecturer and facilitator in the interferometry laboratory. Dunlap Institute, University of Toronto, Canada.

April 2015 - August 2015 Mechanics lecturer at the Departamento de Ciencias Físicas (Physics Department), Universidad de La Frontera, Chile.

April 2015 - August 2015 Dynamics lecturer at the Departamento de Ingeniería Mecánica (Mechanical Engineering Department), Universidad de La Frontera, Chile.

OTHER TEACHING EXPERIENCE

26–30 July 2021 Dunlap Instrumentation Summer School. Facilitator for the radio fundamentals laboratory (online format). Dunlap Institute, University of Toronto, Canada.

September 2020 - December 2020 Teaching Assistant for Practical Astronomy (AST326) fall term. University of Toronto, Canada.

August 2020 Teaching Assistant for Practical Astronomy (AST326). Redesign course for online delivery (due to COVID-19 pandemic).

May 2020 - June 2020 Teaching Assistant for Life on Other Worlds (AST251) summer term. University of Toronto, Canada.

May 2020 - June 2020	Teaching Assistant for Great Moments in Astronomy (ASTB03) summer term. University of Toronto Scarborough, Canada.
January 2020 - April 2020	Teaching Assistant for Astrophysics of Planetary Systems (ASTC25) winter term. University of Toronto Scarborough, Canada.
January 2020 - April 2020	Teaching Assistant for Advanced Computational Methods in Physics (PHYD57) winter term. University of Toronto Scarborough, Canada.
January 2020 - April 2020	Teaching Assistant for Stars and Galaxies (AST201) winter term. University of Toronto, Canada.
September 2019 - April 2020	Teaching Assistant for Practical Astronomy (AST326) fall and winter terms. University of Toronto, Canada.
September 2019 - December 2019	Teaching Assistant for Introduction to Practical Astronomy (AST325) fall term. University of Toronto, Canada.
May 2019 - June 2019	Teaching Assistant for Great Moments in Astronomy (ASTB03) summer term. University of Toronto Scarborough, Canada.
May 2019 - June 2019	Teaching Assistant for The Sun and Its Neighbours (AST101) summer term. University of Toronto, Canada.
January 2019 - April 2019	Teaching Assistant for Stars and Galaxies (AST201) winter term. University of Toronto, Canada.
May 2018 - June 2018	Teaching Assistant for The Sun and Its Neighbours (AST101) summer term. University of Toronto, Canada.
January 2018 - April 2018	Teaching Assistant for Stars and Galaxies (AST201) winter term. University of Toronto, Canada.
May 2010 - December 2014	Teaching Assistant for civil engineering students in Calculus I, Calculus II, Calculus III, Differential Equations, General Physics, Physics II, Modern Physics, Fundamental Mathematics, Complex Variable and Mechanics. Universidad de La Frontera, Chile.

WORKSHOPS AND SEMINARS

3–12 July 2017	1st OPTICON Instrumentation School. University of Copenhagen, Denmark.
14–19 August 2016	Dunlap Summer School: Introduction to Astronomical Instrumentation. University of Toronto, Canada.
10–20 May 2016	International Max Planck Research School for Astronomy and Astrophysics. Max-Planck-Institut für Radioastronomie, Germany. Statistics and Data Modeling by Dr. Douglas Applegate.

OUTREACH

26 November 2020	Public talk at Universidad de La Frontera, Temuco, Chile. Introducción a la radio astronomía de Fast Radio Bursts.
8 July 2020	Public talk at Universidad de La Frontera, Temuco, Chile. El radio universo desconocido, fundamentos en radio astronomía.
January 2019	Public Talk at Universidad de La Frontera, Temuco, Chile. Fast Radio Bursts, el último misterio astronómico.
2018 - Present	Outreach events: Astronomy on Tap, Space Time, Doors Open TO, and Skype a Scientist. Toronto, Canada.
December 2012 - December 2013	President and founder of ASTROUFRO, a group orientated in promoting public knowledge of astronomy. Universidad de La Frontera, Chile.

MEDIA APPEARANCES

November 2020	Titulado UFRO forma parte de importante hito astrofísico.

November 2020 Detection of a radio burst in Milky Way could resolve origins of mysterious phenomenon.

January 2019 Radio Interview with Interview Bio-Bio La Radio, Chile. Científicos detectan por segunda vez misteriosas ondas de radio desde una galaxia lejana.

May 2015 A Successful Year for the CTIO Undergraduate Internship Programs in Chile.

COMPUTING SKILLS

Operating systems Linux, Mac and Windows.

Languages Arduino, bash, C, C++, CASA, Git, IRAF, Open MPI, Matlab, and Python (astropy).

Markup languages HTML, LaTeX, Gnuplot and Ti*k*Z.

Productive tools Abaqus, Ansys, CATIA, LibreOffice and Office.

OTHER

September 2009 - September 2010 General Secretary of the Civil Industrial Engineering student's union. Universidad de La Frontera, Chile.

Languages Spanish (Español Chile) — Native speaker.
English — Professional working proficiency.
Italian — Elementary proficiency.
German — Elementary proficiency.