

Bárbara Cruvinel Santiago

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| Education | Columbia University – New York, NY, USA Physics Ph.D. Student; M.Phil in Physics (May 2021); M.A. in Physics (May 2020) Yale University – New Haven, CT, USA B.S. in Physics (Intensive Track), GPA: 3.68/4.0 Colégio Objetivo (High School) – Santos, SP, Brazil | Aug 2018 – Present Aug 2013 – May 2017 Jan 2010 – Dec 2012 |
| Research Experience | Graduate Research at Columbia (Schiminovich Group) – New York, NY, USA Work in Prof. Schiminovich group on the development of the the next generation of UV detectors for the study of intergalactic and circumgalactic media emission. Post-Bacc Research at MIT-LIGO (Mavalvala Group) – Cambridge, MA, USA Work in Prof. Nergis Mavalvala's LIGO group on a optomechanical light squeezing experiment. Focus on noise characterization and on the development of a light intensity stabilization servo. Undergraduate Research at Yale (DeMille Group) – New Haven, CT, USA Work in Prof. David DeMille's group on the development and upgrade of hardware for his experiments. Undergraduate Research at CERN (Demers Group) – Meyrin, Switzerland Work in Prof. Sarah Demers' group at the ATLAS Experiment in the search for W,Z associated Higgs production. | Jan 2019 – Present Jul 2017 – Jun 2018 Jun 2015 – May 2017 Jun 2014 – Aug 2014 |
| Most Important Honors and Awards | Five Sigma Physicist Award – USA American Physical Society Government Affairs award for outstanding advocacy. Physicists Coalition's Next-Generation Fellowship – USA One of 4 fellows in the year-long program sponsored by the American Physical Society and the Princeton Science & Global Security Program to train early-career scientists in nuclear threat reduction policymaking. Future Investigators in NASA Earth and Space Science and Technology Fellowship – USA NASA's 3-year graduate student fellowship awarded to student-designed research projects that contribute to NASA's exploration goals; formerly known as NESSF. Yale College Dean's Research Fellowship in the Sciences – New Haven, USA Summer award to do research at Yale and start senior thesis. Pierson College Richter Summer Fellowship – New Haven, USA Summer award to do research at Yale and start senior thesis. Michele Dufault Memorial Scholarship for Yale Women in STEM – New Haven, USA Academic year scholarship awarded to selected women pursuing STEM majors at Yale. Tetelman Fellowship for International Research in the Sciences – New Haven, USA Summer award to do research at CERN. Science, Technology and Research Scholars Program I (STARS I) – New Haven, USA Selective mentoring program for minority students interested in STEM at Yale in their freshman year. Fundação Estudar Scholarship – São Paulo, Brazil Merit-based scholarship awarded to 27 out of 11,000 applicants based on academic excellence and students' potential to lead and leave a positive legacy in Brazil. 25th International Young Physicists' Tournament (IYPT), Bronze Medal – Germany IYPT is considered the Physics World Cup for high school students. Teams of 5 students selected in national competitions in each country work on open-ended problems and debate about them. 24th International Young Physicists' Tournament (IYPT), 15th place – Iran IYPT is considered the Physics World Cup for high school students. Teams of 5 students selected in national competitions in each country work on open-ended problems and debate about them. | 2022 2020 2019 2016 and 2015 2016 and 2015 2016 2014 2014 2013 2012 2011 |
| Skills | <i>Programming:</i> Matlab, Mathematica, Python, C/C++ and HTML. <i>Languages:</i> Portuguese (native), English (fluent), German (intermediate) and Spanish (read). | |
| Teaching, Mentoring and Outreach | Introductory Physics Recitations and Labs, TA – Columbia University, New York, USA Responsible for teaching introductory physics recitations and labs to over 140 pre-medical and engineering undergrads over 2 years. Courses: UN1202, UN1401, UN1292, UN1291. | 2018-2020 |

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| | National Selection Tournament of US IYPT , <i>Juror</i> – New Haven, USA | Spring 2018 |
| | Judged selection of high school team to represent the US at the International Young Physicists' Tournament. | |
| | New Haven Science Fair , <i>Mentor</i> – New Haven, USA | Spring 2017 |
| | Mentored a New Haven public school 9th grader on a thermodynamics project. She won 2nd place in the entire fair and an award for science communication. | |
| | Yale College Dean's Office , <i>STARS Peer Mentor</i> – New Haven, USA | 2016 – 2017 |
| | Worked as Peer Mentor for incoming minority students interested in pursuing STEM majors at Yale who participate in the Science, Technology and Research Scholars Program I. | |
| | Yale Girls Science Investigations , <i>Volunteer</i> – New Haven, USA | Fall 2016 |
| | Volunteered to help GSI, which brings elementary school girls to Yale to do fun experiments for a day. | |
| | Yale Office of International Students and Scholars , <i>Peer Liaison</i> – New Haven, USA | 2015 – 2016 |
| | Worked as a Peer Liaison to help incoming international freshmen adjusting to the Yale environment. | |
| | Yale Center for Language Studies , <i>Portuguese Tutor</i> – New Haven, USA | Mar 2015 – Apr 2017 |
| | Worked as a tutor for Yale students studying Portuguese language. | |
| | Splash at Yale , <i>Teacher</i> – New Haven, USA | Spring 2015 |
| | Co-taught the course <i>The Physics of Interstellar</i> for high school students. | |
| | Brazilian Student Council on Undergraduate Education , <i>Mentor</i> – Brazil | 2014 – 2015 |
| | Mentored 3 Brazilian high school students applying to American colleges. | |
| | Yale Department of Spanish and Portuguese , <i>Portuguese Grader</i> – New Haven, USA | 2013 – 2014 |
| | Worked as a grader of homework assigned in Portuguese classes. | |
| Policy and Lobbying | NAGPS Legislative Action Days (LAD) , <i>Columbia Delegation Member</i> | Mar 2020 |
| | I was a part of Columbia's delegation to NAGPS's LAD and met with HR and Senate staff about issues and bills that affect grad students (online because of COVID-19). | |
| | Lobbying against ICE removal of SEVP exemption , <i>Initiative Organizer</i> | Jul 2020 |
| | After ICE removed the exemption permitting international students to maintain their status taking online courses, I led a group of physics students who met (virtually) with House Reps. and congressional staff. | |
| Leadership Positions | SU(5) Peer Mentoring , <i>Founding Member & Mentor/Facilitator</i> | 2020-Present |
| | SU(5) provides a network and a mentor to incoming astronomy and physics graduate students nationwide. | |
| | Columbia Physics Grad Council , <i>President & Diversity Liaison</i> – New York, USA | 2019 – Present |
| | Served as President (2020-2021) and as Climate and Diversity Liaison (2019-2020). Addressed students' quality of life and academic issues alongside the dept.'s chair and committees, and other student groups. | |
| | Columbia Spectra , <i>Graduate Coordinator</i> – New York, USA | 2018 – 2020 |
| | Formerly the Columbia Society for Women in Physics. I coordinated events targeting current and prospective grad students, and advised female and underrepresented undergrads in physics. | |
| | Yale Physics Climate and Diversity Committee , <i>Undergrad Rep.</i> – New Haven, USA | 2015 – 2017 |
| | Represented the interest of Yale physics undergrads with respect to the climate of the department. | |
| | Yale Women in Physics , <i>Co-President & Co-Coordinator</i> – New Haven, USA | 2014 – 2016 |
| | Served as President (2015-2016) and as Conference Co-Coordinator (2014-2015). Responsible for organizing a national conference, panels and social events for the Yale physics community. | |
| | Brazil Club at Yale , <i>President & Vice-President</i> – New Haven, USA | 2014 – 2016 |
| | Served as President (2015-2016) and Vice-President (2014-2015). Responsible for organizing social events, talks and meals for people interested in Brazil at Yale. | |
| | Yale Admissions Office , <i>Science Tour Guide</i> – New Haven, USA | Summer 2015 |
| | Worked part-time as a tour guide of Yale's science facilities. | |
| Extra Coursework and Summer Schools | George Washington University Nuclear Security Boot Camp – Online | Jun 2020 |
| | Selective week-long course on nuclear security taught by science/policy experts and policymakers. | |
| | Dunlap Institute Introduction to Astronomical Instrumentation – Toronto, Canada | Aug 2016 |
| | Selective week-long theoretical/experimental summer school at the Dunlap Institute for Astronomy and Astrophysics at the University of Toronto for college seniors and graduate students. | |
| | Course of General Astronomy – Brazil | Nov 2011 – May 2012 |
| | Course for the top 120 in the Brazilian Astronomy Olympiad competing to represent Brazil internationally. | |
| | IV Advanced School of Nuclear Energy (EAEN) – São Paulo, Brazil | Jul 2011 |
| | Selective week-long school for high schoolers at the Institute for Nuclear Energy Research at USP. | |

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| Conferences and Presentations | EstroGênia: Meninas na Ciência – Tecnologia Educacional (Grupo Positivo), Online, Mar. 2021, <i>Invited Panelist</i> , Panel: <i>How Schools Should Promote STEM Education</i> . | |
| | I Congresso Nacional de Inovação e Popularização da Ciência – Federal University of Minas Gerais (UFMG), Online, Oct. 2020, <i>Invited Panelist</i> , Panel: <i>Science, Innovation and Market after COVID-19</i> . | |
| | 235th American Astronomical Society Meeting – Honolulu, HI, USA, Jan. 2020, <i>Poster Presentation</i> . B. Cruvinel Santiago, N. Melso, H. R. Ong, B. Smiley, M. Rosenthal, M. Murillo, S. Graber, and D. Schiminovich, <i>Circumgalactic H-alpha Spectrograph: Initial Results from the First Engineering Runs</i> . | |
| | MIT Physics Exploration Day – Cambridge, MA, USA, Apr. 2018, <i>Poster Presentation</i> . B. Cruvinel Santiago, and I. Phinney, <i>Overview of Advanced LIGO and future methods of noise reduction</i> . | |
| | Scientista Symposium – New York, NY, USA, Apr. 2017, <i>Poster Presentation</i> . B. Cruvinel Santiago, and D. DeMille, <i>Evaluating and Upgrading a Fast Compact Laser Shutter Prototype</i> . | |
| | Pierson College Mellon Forum at Yale – New Haven, CT, USA, Feb. 2017, <i>Oral Presentation</i> . B. Cruvinel Santiago, <i>Development of Hardware for Atomic Physics Experiments</i> . | |
| | APS Conference for Undergraduate Women in Physics (CUWiP) at Yale – New Haven, USA, CT, Jan. 2015, <i>Conference Co-Coordinator</i> . | |
| Other Honors and Awards | Physics Olympiad of the State of São Paulo 2012 (OPF) , <i>Bronze Medal</i> – Brazil | 2012 |
| | OPF is a state-level physics competition for São Paulo high school students. | |
| | 3rd Brazilian Linguistics Olympiad (OBL) , <i>Honorable Mention</i> – Brazil | 2012 |
| | OBL is a national linguistics competition for Brazilian high school students. | |
| | IYPT Brasil 2012 , <i>Silver Medal, Selected for national delegation</i> – Brazil | 2012 |
| | National competition that selects 5 high school students to go to represent Brazil at the IYPT. | |
| | XV Brazilian Olympiad on Astronomy and Astronautics (OBA) , <i>Gold Medal</i> – Brazil | 2012 |
| | OBA is a national astronomy competition for Brazilian middle and high school students. | |
| | Regional Tournament of Exact Sciences (TEX) , <i>1st place</i> – Santos, Brazil | 2012 |
| | TEX is a competition on physics, chemistry and math for students in the Baixada Santista region. | |
| | IYPT Brasil 2011 , <i>Silver Medal, Selected for national delegation</i> – Brazil | 2011 |
| Literary and Magazine Publications | National competition that selects 5 high school students to go to represent Brazil at the IYPT. | |
| | XIV Brazilian Olympiad on Astronomy and Astronautics (OBA) , <i>Silver Medal</i> – Brazil | 2011 |
| | OBA is a national astronomy competition for Brazilian middle and high school students. | |
| | Physics Olympiad of the State of São Paulo 2012 (OPF) , <i>Honorable Mention</i> – Brazil | 2010 |
| | OPF is a state-level physics competition for São Paulo high school students. | |
| | IYPT Brasil 2010 , <i>Bronze Medal</i> – Brazil | 2010 |
| | National competition that selects 5 high school students to go to represent Brazil at the IYPT. | |
| | XII Brazilian Olympiad on Astronomy and Astronautics (OBA) , <i>Silver Medal</i> – Brazil | 2009 |
| | OBA is a national astronomy competition for Brazilian middle and high school students. | |
| | XI Brazilian Olympiad on Astronomy and Astronautics (OBA) , <i>Silver Medal</i> – Brazil | 2008 |
| | OBA is a national astronomy competition for Brazilian middle and high school students. | |
| | B. Cruvinel Santiago, <i>A female Ph.D. student's cautionary tale and the need for peer mentorship</i> , Women in Astronomy, Summer 2020. | |
| | B. Cruvinel Santiago, <i>Undergraduate Profile Katie Melbourne (SY '19): From Yale to NASA</i> , Yale Scientific Magazine, Spring 2017. | |
| | B. Cruvinel Santiago, <i>Caro fantasma do preconceito inconsciente... (Dear ghost of implicit bias...)</i> , Accent (The Undergraduate Multilingual Magazine at Yale), Fall 2016. | |
| | B. Cruvinel Santiago, <i>Em trânsito: navegando entre dois mundos (In Transit: Navigating Between Two Worlds)</i> , Accent (The Undergraduate Multilingual Magazine at Yale), Spring 2016. | |
| | B. Cruvinel Santiago, <i>Agressividade infundada: o novo vício do eleitor brasileiro (Non-sense aggression: the new addiction of the Brazilian voter)</i> , Accent (The Undergraduate Multilingual Magazine at Yale), Fall 2014. | |
| | B. Cruvinel Santiago, <i>O Brasil e o império da ciência (Brazil and the science empire)</i> , Accent (The Undergraduate Multilingual Magazine at Yale), Spring 2014. | |