

CURRICULUM VITAE

EDUCATION

- **PhD student in astrophysics** **2015-2018**
South African Astronomical Observatory (SAAO) - University of Cape Town (UCT)
Advisors: Dr. Shazrene Mohamed and Prof. Patricia Whitelock
Thesis title: *Multi-wavelength studies of classical novae*
- **MSc. in astrophysics** **2011-2014**
Notre Dame University and Université Saint-Joseph (Lebanon)
Advisor: Dr. Marwan Gebran
Thesis title: *Automated procedure to derive fundamental parameters of B and A star.*
(simultaneously working as a full time high school teacher, see Section experience for more details).
- **BSc. in physics** **2007-2011**
Lebanese University, Faculty of Sciences

EXPERIENCE

- **Postdoctoral research associate** **2018-present**
Michigan State University (MSU)
Advisor: Prof. Laura Chomiuk
- **Supervising undergraduate students** **2018-present**
Michigan State University (MSU):
 - Supervising student A. Muethel.
Paper in prep: “Investigating hard X-ray emission from classical novae”.
 - Supervising undergraduate students in the MSU observers’ group which aims to train students to observe at the MSU campus observatory.
- **Physics lab instructor** **2014-2015**
Notre Dame University – Lebanon
2nd and 3rd year mechanical and electrical engineering lab courses.
- **Physics and mathematics teacher** **2010-2014**
Collège National Orthodox (high school)
 - Teaching physics and mathematics for Grade 7, 8, 9, 10, 11 (*typical class size of 30 students*).
 - Designing lectures of physics and mathematics for the same grades.

AWARDS AND PRESS RELEASES

- **People choice overall winner at the Three Minutes Thesis competition** **February 2017**
University of Cape Town
- **3rd place best talk in astronomy at the SA Institute of Physics conference** **July 2016**
University of Cape Town
- **SAAO/SALT press release** **October 2017**
Discovery of one of the most luminous eruptions from a dying star: SALT contributes to a major international multi-wavelength effort led by South Africa.
(The paper and the discovery were covered by more than 40 media outlets in more than 8 languages).

RESEARCH INTERESTS

- Multi-wavelength observations of novae in the aim of understanding shock interaction, dust formation, common envelope evolution, and ejection mechanisms during these eruptions.
- Radiation-hydro modelling of the outflow of Giant, evolved stars and its interaction with close-in substellar companions.

SKILLS

- **Observational skills and awarded telescope time:**
 - Optical observations on the Southern Astrophysical Research Telescope (SOAR; ~ 100 hours).
 - JHK observations on the 1.4 m infra-red survey facility at the SAAO, Sutherland (~ 200 hours).
 - 1-week training on the Southern African Large Telescope (SALT).
 - Awarded DDT time on the SALT, PI: E. Aydi, February 2015.
 - Co-PI on the SALT transients' program, PI: D. Buckley, [2016-present]
 - Awarded for TRES 2018b, 2019a. PI: E. Aydi
 - Awarded time for Gemini 2019b. PI: E Aydi
 - Awarded time for *NuSTAR* cycle 5. PI: K. Sokolovsky
 - Awarded time for *ALMA* cycle 7. PI. L. Chomiuk
- **Data reduction skills:**
 - Long-slit spectroscopy and spectro-polarimetry data reduction using IRAF and Python environments.
 - Echelle high resolution spectroscopy data reduction using IRAF environment.
 - SHOC photometric data reduction.
- **Computational skills:**
 - Computer programming: C/C++, Python, Unix Shell scripts, Java. .
 - Parallel programming packages: MPI, openMP.
 - TEX, Microsoft office, and most common packages in Linux and Microsoft.

➤ **Modelling skills:**

- Smoothed Particle hydrodynamics (SPH) based codes and grid based codes for fluid dynamics.
- Cosmological simulation code Gadget-2.

SCIENTIFIC PUBLICATIONS

- **E. Aydi**, L. Chomiuk, J. Strader, et al. 2019, arXiv, 1903.09232
- **E. Aydi**, M. Orio, A. P. Beardmore, et al. 2018, MNRAS, 480, 572
- **E. Aydi**, K. L. Page, N. P. M. Kuin, et al. 2018 MNRAS, 474, 2679
- **E. Aydi**, P. Mroz, P. Whitelock, et al. 2016 MNRAS, 461, 1529

- ATels # 13197, 13185, 13176, 13134, 13116, 13112, 13101, 13083, 13068, 13050, 13047, 13034 13029, 13027, 12975, 12963, 12947, 12923, 12907, 12889, 12853, 12842, 12817, 12795, 12674, 12656, 12629, 12613, 12611, 12531, 12511, 12495, 12885, 12385, 12311, 12294, 12142, 11959, 11878, 11867, 11684, 11607, 11364, 11338, 11290, 11287, 11221, 10864, 7472

Check me on ADS: http://cdsads.u-strasbg.fr/cgi-bin/basic_connect?qsearch=Elias+Aydi&version=1

TIME ALLOCATION COMMITTEES

- NASA TESS cycle 2, 2019.
- NASA Fermi cycle 12, 2019.

CONFERENCES AND WORKSHOPS

- Compact white dwarf binaries, September 2019, Yerevan, Armenia
Talk: *Investigating flaring novae* (**invited talk**)
- Stars and their variability, August 2019, Vienna, Austria
Talk: *Nova Carinae 2018 – a first in many respects* (**invited talk**)
- Compact objects in Michigan 7, March 2018, Detroit, USA
Talk: *Investigating flaring novae*
- Midwest workshop on supernovae and transients, March 2019, Chicago, USA
Talk: *A “shock” to the system – classical novae emitting gamma-rays*
- Advances with SALT conference, November 2018, Pretoria, SA
Talk: *SALT – an ultimate machine to study novae*
- COSPAR 42nd assembly, July 2018, Pasadena, USA
Talk: *multiwavelength studies of the two remarkable novae SMC 2016 & V407 Lup*
- Physics of evolved stars conference, July 2017, Nice, France:
Talk: *3D models of the outflow of evolved stars: Formation of multiple spiral structures*
- COASTARS 2017, June 2017, Gothenburg, Sweden:
Talk: *3D models of the outflow of evolved stars: formation of multiple spiral structures*
- Workshop on SALT among the constellation of very large telescopes, June 2017, Poland:

- Talk: *SALT spectroscopic follow-up of classical novae*
- South African Institute of Physics (SAIP) conference, July 2016, UCT, South Africa:
Talk: *3D hydro models of the circumstellar environments of evolved stars.*
 - School for computational astrophysics, May 2016, School of physics, Les Houches, France.
 - High performance computing school, June 2015, University of Johannesburg, South Africa.
 - SALT science conference, June 2015, Stellenbosch, South Africa:
Talk: *SALT Spectroscopic Follow-up of the Unusual Nova OGLE-2015-Nova-01.*
 - MEARIM III conference, September 2014, Beirut, Lebanon:
Talk: *Automated procedure to derive fundamental parameters of B and A stars*
Poster: *Preliminary determination of Fe abundances for B and A stars*

SCIENCE ENGAGEMENT

- Organizing public regular public events at the MSU observatory, which involve public viewing, activities for kids and adults, short talks, and engagement with the public.
- Taking part of public outreach activities in Michigan, including public talks, public viewing, astronomy activities for kids.
- Public talks at the Abrams planetarium:
Talk: *Our ancestors – stellar evolution*; October 2018 and April 2019 (MSU Sci-Fest).
- Running public open nights at the SAAO, Cape Town, twice a month for 3 years.
- Public tours of the 1897 McClean refractor telescope at the SAAO, Cape Town.
- Organizing public outreach activities in Cape Town during major astronomical events (e.g. eclipses, transits, meteor showers).
- During observing duties at the SAAO, Sutherland:
 - Participating in public tours of the telescopes on site (SALT and the other small telescopes).
 - Participating in stargazing tours using a wide range of small reflector telescopes.
- Launching the first Lebanese YouTube and Facebook channel that communicate astronomy to the public using Lebanese language (April 2017). I post weekly short-podcasts discussing a wide range of topics in astronomy. The channel “Lebanese Astro-Podcast” has thousands of followers on Facebook and has been featured on Lebanese TV channels several times.
- SAAO student representative [February 2016 - September 2017].
- Open night talk at the SAAO, Cape Town:
 - October 2017: *Dying stars in 3D!!*
 - February 2016: *Are we living in a simulation?*

Languages:

Fluent in English, French, and Arabic (mother tongue).

Professional references

- **Prof. Laura Chomiuk**
E-mail: chomiuk@pa.msu.edu
Michigan State University
567 Wilson Road, biomedical and physical sciences, Room 3276
East Lansing, MI, 48824, USA
Phone: +1 517 884 5608
- **Dr. Shazrene Mohamed**
E-mail: shazrene@sao.ac.za
South African Astronomical Observatory – University of Cape Town
P.O. Box 9, Observatory, 7935, Cape Town
South Africa
- **Dr. David Buckley**
E-mail: dibnob@sao.ac.za
South African Astronomical Observatory
P.O. Box 9, Observatory, 7935, Cape Town
South Africa