

## 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: *Multiwavelength 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)  
Summer project title: “Investigating hard X-ray emission from classical novae”  
Supervising undergraduate students in the MSU observers’ group which aims to trains undergraduate students to observe at the MSU observatory.
- **Physics lab instructor** **2014-2015**  
at the Notre Dame University – Lebanon  
*2<sup>nd</sup> and 3<sup>rd</sup> year mechanical and electrical engineering*
- **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
- **3<sup>rd</sup> 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**

- Multiwavelength observations of classical novae.
- Shocks in classical novae ejecta.
- Stellar winds and mass loss.
- Evolved stars: Asymptotic Giant Branch (AGB) stars and Mira variables.
- Binary evolution and interaction.
- Radiation-hydrodynamics modelling.

## **SKILLS**

- **Observational skills:**
  - 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 TRES observing time - semesters 2018b, 2019a.
  - Awarded DDT time on the SALT, PI: E. Aydi, February 2015.
  - Co-PI on the SALT transients program, PI: D. Buckley, [2016-present]
- **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.
  - Supercomputer experience, MONS and MENSA clusters (SAAO).
  - 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**

[http://cdsads.u-strasbg.fr/cgi-bin/basic\\_connect?qsearch=Elias+Aydi&version=1](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 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 42<sup>nd</sup> 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*
- Master Thesis Dissertation, June 2014, Université Saint-Joseph, Lebanon:  
Talk: *Automated procedure to derive fundamental parameters of B and A stars: Application to the young open cluster NGC 3293*
- SF2A conference, June 2014, Paris, France:

Poster: *Automated procedure to derive fundamental parameters of B and A stars: Application to the young open cluster NGC 3293*

- IAU MENA regional summer school: Astronomy with Small telescopes, June 2014, Notre Dame University, Lebanon.

## **SCIENCE ENGAGEMENT**

- Taking part of organizing public nights at the MSU observatory.
- 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](mailto: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
- **Prof. Patricia Whitelock**  
E-mail: [paw@sao.ac.za](mailto:paw@sao.ac.za)  
South African Astronomical Observatory – University of Cape Town  
P.O. Box 9, Observatory, 7935, Cape Town  
South Africa  
Phone: +27 214609318
- **Dr. David Buckley**  
E-mail: [dibnob@sao.ac.za](mailto:dibnob@sao.ac.za)  
South African Astronomical Observatory – University of Cape Town  
P.O. Box 9, Observatory, 7935, Cape Town  
South Africa