Elias Aydi

Michigan State University
567 Wilson Road, BPS 273, East Lansing, MI, 48824, USA
E-mail: elias.aydi@gmail.com - aydielia@pa.msu.edu – Phone: +1517775128

CURRICULUM VITAE

EXPERIENCE

- **NASA Hubble Fellow** **2022-present**
  Michigan State University (MSU)

- **Postdoctoral research associate** **2018-2022**
  Michigan State University (MSU)
  Advisor: Prof. Laura Chomiuk

- **Supervising undergraduate students** **2018-present**
  Michigan State University (MSU):
  Supervising undergraduate students at MSU for research projects, which are leading to scientific publications.
  - 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.

EDUCATION

- **PhD student in astrophysics** **2015-2018**
  South African Astronomical Observatory (SAAO) - University of Cape Town (UCT)
  Advisors: Prof. 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: Prof. 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

AWARDS AND PRESS RELEASES

- **NASA Hubble Fellowship** **January 2022**
  Title: Combining observations with simulations to decipher shocks in novae
- **MSU Nat Sci press release** **March 2022**
  In the wake of a dying sun
  https://msutoday.msu.edu/news/2022/what-a-sunset
- **NASA/MSU press release** **April 2020**
  NASA missions reveal help reveal the power of shock waves in a nova explosion
  https://www.nasa.gov/feature/goddard/2020/nasa-missions-help-reveal-the-power-of-shock-waves-in-a-nova-explosion/
- **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.
  https://astronomy.com/news/2017/10/bright-nova-spotted
- **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

AWARDED TELESCOPE TIME AND GRANTS:

- PI on ADAP cycle 22 (awarded **460k USD** grant).
- PI on Fermi cycle 13 joint Fermi/NOAO/NRAO proposal (awarded **60K USD** grant + telescope time on VLA and Gemini for 2021A/21B).
- PI on Swift cycle 16 proposal (awarded **38K USD** grant + telescope time).
- PI on NOIRLab/LCO NRES proposal for semester 22A (awarded time).
- PI on CHARA proposals for semesters 2019B/20A/20B/21A/21B (awarded time).
- PI on Gemini proposal for semester 2019B (awarded time).
- PI on TRES proposal for semesters 2019B, 2020A, and 2020B (awarded time).
- PI VLBA proposals 2021A/21B (awarded time).
- Co-PI on VLA proposals 2018B, 2019A/19B, 2020A/20B, 2021A/21B (awarded time).
- Co-PI on NuSTAR cycle 4 and 5 proposals (awarded grant + telescope time).
- Co-PI on ALMA cycle 7 proposal (awarded time).
- Co-PI on VLA/VLBA proposals 2019A/19B/20A/21B (awarded time).
- Co-PI on LCO proposal for semester 2021B (awarded time).
- Co-I on SALT large transient program and PI of nova follow up under this program for years 2016, 2017, 2018, 2019, 2020, and 2021 (awarded time).
- Co-I on XMM-Newton AO-18 (awarded time).
- Co-I HST proposal 2020 (awarded time + grant).

TIME ALLOCATION COMMITTEES

Served on several time allocation committees:

- NASA Fermi Cycle 15 2022.
- NASA Tess Cycle 5 2022.
- NOIRLab TAC semester 2022A.
- NASA Fermi cycle 14, 2021.
- NASA FINESST 2021.
- NASA ADAP 2020.
- NASA Chandra cycle 22, 2020.
- NASA Fermi cycle 12, 2019
- NASA TESS cycle 2, 2019

SKILLS

Observational and data reduction skills:

- Optical observations on the Southern Astrophysical Research Telescope (SOAR; ~ 600 hours).
- JHK observations on the 1.4 m infra-red survey facility at the SAAO, Sutherland (~ 200 hours).
- Observing and training students on the MSU campus observatory.
- 1-week training on the Southern African Large Telescope (SALT).
- Data reduction and analysis of a variety of data from several facilities across the multi-wavelength spectrum. Special expertise in optical and IR spectroscopy.
- Data reduction and analysis of radio data from VLA and VLBA.

Computational and modelling skills:

- Computer programming: Python, C/C++, Unix Shell scripts, Java. .
- Parallel programming packages: MPI, openMP.
- TEX, Microsoft office, and most common packages in Linux and Microsoft.
- Smoothed Particle hydrodynamics (SPH) based codes and grid-based codes for fluid dynamics.

RECENT CONFERENCES AND WORKSHOPS

- NASA TDAMM conference 2022 **(invited talk)** - title: new insights into classical novae
- APS 2021– NASA's γ-ray symposium (**invited talk**) – title: *shocking insights into novae*
- KITP 2021 – WD from physics to astrophysics (**invited talk**) – title: *shocking insights into novae*
- AAS 237 NASA Fermi both (**invited talk**) – title: *simultaneous space-based observations of nova V906 Car alter our understanding of stellar eruptions*
- AAS 235 special session: "Transient science with TESS" (**invited talk**) - title: *Novae with TESS – exploring a new parameter space*
- Compact white dwarf binaries, 2019, Armenia (**invited talk**) - title: *Investigating flaring novae*
- Stars & their variability, 2019, Austria (**invited talk**) – title: *Nova Car 2018 – a first in many respects*
- Midwest workshop on supernovae and transients, 2019, Chicago, USA- title: *A "shock" to the system*
- Advances with SALT conference, 2018, SA - title: *SALT – an ultimate machine to study novae*

- COSPAR 42nd assembly, 2018, Pasadena, USA - title: *multiwavelength studies of the two remarkable novae SMC 2016 & V407 Lup*
- Physics of evolved stars, 2017, Nice, France - title: *3D models of the outflow of evolved stars*

SCIENCE ENGAGEMENT

- Organizing regular public events at the MSU observatory, which involve public viewing, activities for kids and adults, short talks, and engagement with the public.
- Starting the "Two Minute Paper" project which aims at highlighting papers led by MSU astronomers in two minute videos directed to a public audience, to communicate to the public the research they are funding.
- Co-organizing (with Prof. Daniel Hayden – MSU) the "Great Lakes Lectures" project – a series of virtual talks in a 360 degrees setup covering a wide range of scientific and academic topics.
- Co-organizing the Astronomy on Tap in Lansing.
- Engaging in public outreach activities in Michigan, including public talks, public viewing, astronomy activities for kids, such as:
  - Presenting multiple public talks at the Abram's planetarium.
  - Presenting multiple public talks at the MSU science festival.
  - Presenting multiple public talks at AoT lansing.
  - Giving a series of virtual activities and talks to 4-H programs across Michigan.
- Running public open nights at the SAAO, Cape Town, twice a month for 3 years and giving public talks during these events, as well as public tours of the historical at the site.
- Organizing public outreach activities in Cape Town during major astronomical events (e.g. eclipses, transits, meteor showers).
- 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.
- Creator of MindBlowing Minute. A TikTok and Instagram channel that shares with the viewer interesting, mind-blowing facts in less than a minute videos. The channel is targeted to the teens and younger generation, primarily to offer an alternative to the main stream content on these apps.

MAJOR SCIENTIFIC PUBLICATIONS

- **E. Aydi**, K. Sokolovsky, J. S. Bright, et al. 2022, ApJ, 939, 6
- **E. Aydi** and S. Mohamed 2022, MNRAS, 513, 4405
- L. Chomiuk, J. Linford, **E. Aydi**, et al. 2021 arXiv, 2107.06521
- A. C. Gordon, **E. Aydi**, K. L. Page, et al. 2021, ApJ, 910, 134 (supervising A. C. Gordon).
- **E. Aydi**, L. Chomiuk, L. Izzo, et al. 2020, ApJ, 905, 62
- **E. Aydi**, K. V. Sokolovsky, L. Chomiuk, et al. 2020, Nat Ast, 4, 766
- **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

Professional References:

- **Prof. Laura Chomiuk**
  E-mail: chomiukl@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. Briand D. Metzger**
  E-mail: bdm2129@columbia.edu
  Columbia University
  Department of Physics, 909 Pupin Hall
  New York, NY 10027, USA
  Phone: +1 212 854 9702

- **Prof. Krzystof Stanek**
  E-mail: stanek.32@osu.edu
  Ohio State University
  140 West 18th Avenue
  Columbus, Ohio 43210-1173, USA

- **Prof. David Buckley**
  E-mail: dibnob@saao.ac.za
  SAAO – University of Cape town