

MANISHA SHRESTHA

Tucson, USA— mshrestha1@arizona.edu— +1 520-484-0683

EDUCATION

University of Denver

Ph.D. in Physics

Dissertation: Polarized bow shocks reveal features of the winds and environments of massive stars

Denver, CO

August 2018

Truman State University

BS in Physics, Minor in Mathematics

Kirksville, MO

Spring 2012

RESEARCH INTERESTS

- Gamma-ray bursts physics
- Electro-magnetic counterpart of gravitational wave events such as kilonova
- Core-collapse supernovae
- Radiative transfer simulations

RESEARCH EXPERIENCE

University of Arizona

Postdoctoral Research Assistant

Advisor: Dr. David J. Sand

Tucson, USA

August 2022 - Present

Liverpool John Moores University

Postdoctoral Research Assistant

Advisor: Dr. Iain A. Steele.

Liverpool, UK

December 2018 - May 2022

University of Denver

Postdoctoral Research Assistant

Advisor: Dr. Jennifer L. Hoffman.

Denver, CO

Summer 2018 - December 2018

University of Denver

Graduate Research Assistant

Advisor: Dr. Jennifer L. Hoffman.

Denver, CO

Fall 2012 - Summer 2018

Truman State University

Undergraduate Research Assistant

Advisor: Dr. Michael Goggin

Kirksville, MO

2011-2012

Advisor: Dr. Matthew Beaky

2009-2010

AWARDS and HONORS

- Astrophysics Research Institute's Outstanding Citizen Award 2021
- Outstanding student paper, Four Corners Section meeting, Fort Collins 2017
- Teaching Excellence Award, Natural Science and Mathematics, University of Denver 2016-2017
- American Association of Physics Teachers, Outstanding Physics Teaching Assistant 2015
- Outstanding Graduate Teaching Assistant, Department of Physics and Astronomy, University of Denver Winter 2015
- Invited to attend the national Supercomputing conference 2014
- Honorable Mention, poster competition, Rocky Mountain High-Performance Computing Symposium 2014

PUBLICATIONS

First Author

- IMPACT OF JETS ON KILONOVA PHOTOMETRIC AND POLARIMETRIC EMISSION FROM BINARY NEUTRON STAR MERGERS
Shrestha, M., Bulla, M., Nativi, L., Markin, I., Rosswog, S., Dietrich, T., 2023, MNRAS, 523 ([ADS link](#))
- EVIDENCE OF WEAK CIRCUMSTELLAR MEDIUM INTERACTION IN THE TYPE II SN 2023AXU
Shrestha, M., Pearson J., Wyatt S., Sand D. J., Hosseinzadeh G., Bostroem K. A., Andrews J. E., et al., 2023, arXiv, arXiv:2310.00162. doi:10.48550/arXiv.2310.00162, accepted for publication ApJ ([ADS link](#))
- GRB 210619B: FIRST GAMMA-RAY BURST DETECTION BY THE NOVEL POLARIMETER MOPTOP
Shrestha, M., Steele, I. A., Kobayashi, S., Smith, R. J., Jermak, H., Piascik, A., Mundell, C. G., 2023, RNAAS, 7 ([ADS link](#))
- LIMIT ON SUPERNOVA EMISSION IN THE BRIGHTEST GAMMA-RAY BURST, GRB 221009A
Shrestha, M., Sand, D. J., Alexander, K. D., Bostroem, K. A., Hosseinzadeh, G., Pearson, J., Aghakhanloo, M., Vinkó, J., Andrews, J. E., Jencson, J. E., Lundquist, M. J., Wyatt, S., Howell, D. A., McCully, C., Gonzalez, E. P., Pellegrino, C., Terreran, G., Hiramatsu, D., Newsome, M., Farah, J., Jha, S. W., Smith, N., Wheeler, J. C., Martínez-Vázquez, C., Carballo-Bello, J. A., Drlica-Wagner, A., James, D. J., Mutlu-Pakdil, B., Stringfellow, G. S., Sakowska, J. D., Noël, N. E. D., Bom, C. R., Kuehn, K., 2023, ApJL, 946 ([ADS link](#))
- POLARIMETRY AND PHOTOMETRY OF GAMMA-RAY BURSTS AFTERGLOWS WITH RINGO3
Shrestha, M., Steele, I. A., Kobayashi, S., Smith, R. J., Guidorzi, C., Jordana-Mitjans, N., Jermak, H., Arnold, D., Mundell, C. G., Gomboc, A., 2022, MNRAS, 516 ([ADS link](#))
- GRB 191016A: A HIGHLY COLLIMATED GAMMA-RAY BURST JET WITH MAGNETIZED ENERGY INJECTION
Shrestha, M., Steele, I. A., Kobayashi, S., Jordana-Mitjans, N., Smith, R. J., Jermak, H., Arnold, D., Mundell, C. G., Gomboc, A., Guidorzi, C., 2022, MNRAS, 509 ([ADS link](#))
- POLARIZATION SIMULATIONS OF STELLAR WIND BOW SHOCK NEBULAE - II. THE CASE OF DUST SCATTERING
Shrestha, M., Neilson, H. R., Hoffman, J. L., Ignace, R., Fullard, A. G., 2021, MNRAS, 500 ([ADS link](#))
- CHARACTERIZATION OF A DUAL-BEAM, DUAL-CAMERA OPTICAL IMAGING POLARIMETER
Shrestha, M., Steele, I. A., Piascik, A. S., Jermak, H., Smith, R. J., Copperwheat, C. M., 2020, MNRAS, 494 ([ADS link](#))
- POLARIZATION SIMULATIONS OF STELLAR WIND BOW-SHOCK NEBULAE - I. THE CASE OF ELECTRON SCATTERING
Shrestha, M., Neilson, H. R., Hoffman, J. L., Ignace, R., 2018, MNRAS, 477 ([ADS link](#))

Selected Co-author

- SAGUARO: TIME-DOMAIN INFRASTRUCTURE FOR THE FOURTH GRAVITATIONAL-WAVE OBSERVING RUN AND BEYOND
Hosseinzadeh, Griffin, Paterson, Kerry, Rastinejad, Jillian C., **Shrestha, Manisha**, Daly, Philip N.,

Lundquist, Michael J., Sand, David J., Fong, Wen-fai, Bostroem, K. Azalee, Hall, Saarah, Wyatt, Samuel D., Gibbs, Alex R., Christensen, Eric, Lindstrom, William, Nation, Jonathan, Chatelain, Joseph, McCully, Curtis, 2023, arXiv, ([ADS link](#))

- A COMPREHENSIVE OPTICAL SEARCH FOR PRE-EXPLOSION OUTBURSTS FROM THE QUIESCENT PROGENITOR OF SN 2023IXF
Dong, Y., Sand, D. J., Valenti, S., Bostroem, K. A., Andrews, J. E., Hosseinzadeh, G., Hoang, E., Janzen, D., Jencson, J. E., Lundquist, M., Meza Retamal, N. E., Pearson, J., **Shrestha, M.**, Haislip, J., Kouprianov, V., Reichart, D. E., 2023, arXiv, ([ADS link](#))
- IDENTIFYING THE SN 2022ACKO PROGENITOR WITH JWST
Van Dyk, S. D., Bostroem, K. A., Zheng, W., Brink, T. G., Fox, O. D., Andrews, J. E., Filippenko, A. V., Dong, Y., Hoang, E., Hosseinzadeh, G., Janzen, D., Jencson, J. E., Lundquist, M. J., Meza, N., Milisavljevic, D., Pearson, J., Sand, D. J., **Shrestha, M.**, Valenti, S., Howell, D. A., 2023, MNRAS, 524 ([ADS link](#))
- A MULTI-YEAR PHOTOPOLARIMETRIC STUDY OF THE SEMI-REGULAR VARIABLE V CVN AND IDENTIFICATION OF ANALOGUE SOURCES
Neilson, H., Steenzen, N., Simpson, J., Ignace, R., **Shrestha, M.**, Erba, C., Henson, G. D., 2023, A&A, 677 ([ADS link](#))
- EARLY SPECTROSCOPY AND DENSE CIRCUMSTELLAR MEDIUM INTERACTION IN SN 2023IXF
Bostroem, K. A., Pearson, J., **Shrestha, M.**, Sand, D. J., Valenti, S., Jha, S. W., Andrews, J. E., Smith, N., Terreran, G., Green, E., Dong, Y., Lundquist, M., Haislip, J., Hoang, E. T., Hosseinzadeh, G., Janzen, D., Jencson, J. E., Kouprianov, V., Paraskeva, E., Meza Retamal, N. E., Reichart, D. E., Arcavi, I., Bonanos, A. Z., Coughlin, M. W., Farah, J., Hawley, S., Hebb, L., Hiramatsu, D., Howell, D. A., Iijima, T., Ilyin, I., McCully, C., Moran, S., Morris, B. M., Mura, A. C., Newsome, M., Pabst, M. T., Ochner, P., Padilla Gonzalez, E., Pastorello, A., Pellegrino, C., Ravi, A. P., Reguitti, A., Salo, L., Vinko, J., Wheeler, J. C., Williams, G. G., Wyatt, S., 2023, ApJL, 956, L5. doi:10.3847/2041-8213/acf9a4 ([ADS link](#))
- A LUMINOUS RED SUPERGIANT AND DUSTY LONG-PERIOD VARIABLE PROGENITOR FOR SN 2023IXF
Jencson, J. E., Pearson, J., Beasor, E. R., Lau, R. M., Andrews, J. E., Bostroem, K. A., Dong, Y., Engesser, M., Gomez, S., Guolo, M., Hoang, E., Hosseinzadeh, G., Jha, S. W., Karambelkar, V., Kasliwal, M. M., Lundquist, M., Meza Retamal, N. E., Rest, A., Sand, D. J., Shahbandeh, M., **Shrestha, M.**, Smith, N., Strader, J., Valenti, S., Wang, Q., Zenati, Y., 2023, ApJL, 952 ([ADS link](#))
- HIGH RESOLUTION SPECTROSCOPY OF SN 2023IXF'S FIRST WEEK: ENGULFING THE ASYMMETRIC CIRCUMSTELLAR MATERIAL
Smith, N., Pearson, J., Sand, D. J., Ilyin, I., Bostroem, K. A., Hosseinzadeh, G., **Shrestha, M.**, 2023, ApJ, 956 ([ADS link](#))
- SHOCK COOLING AND POSSIBLE PRECURSOR EMISSION IN THE EARLY LIGHT CURVE OF THE TYPE II SN 2023IXF
Hosseinzadeh, G., Farah, J., **Shrestha, M.**, Sand, D. J., Dong, Y., Brown, P. J., Bostroem, K. A., Valenti, S., Jha, S. W., Andrews, J. E., Arcavi, I., Haislip, J., Hiramatsu, D., Hoang, E., Howell, D. A., Janzen, D., Jencson, J. E., Kouprianov, V., Lundquist, M., McCully, C., Meza Retamal, N. E., Modjaz, M., Newsome, M., Padilla Gonzalez, E., Pearson, J., Pellegrino, C., Ravi, A. P., Reichart, D. E., Smith, N., Terreran, G., Vinkó, J., 2023, ApJL, 953 ([ADS link](#))
- OPTIMIZING THE OBSERVATION OF OPTICAL KILONOVAE WITH MEDIUM-SIZE TELESCOPES
Camisasca, A. E., Steele, I. A., Bulla, M., Guidorzi, C., **Shrestha, M.**, 2023, MNRAS, 522 ([ADS link](#))
- THE EARLY LIGHT CURVE OF SN 2023BEE: CONSTRAINING TYPE IA SUPERNOVA PROGENITORS THE APIAN WAY
Hosseinzadeh, G., Sand, D. J., Sarbadhicary, S. K., Ryder, S. D., Jha, S. W., Dong, Y., Bostroem,

- K. A., Andrews, J. E., Hoang, E., Janzen, D., Jencson, J. E., Lundquist, M., Meza Retamal, N. E., Pearson, J., **Shrestha, M.**, Valenti, S., Wyatt, S., Farah, J., Howell, D. A., McCully, C., Newsome, M., Padilla Gonzalez, E., Pellegrino, C., Terreran, G., Alzaabi, M., Green, E. M., Gurney, J. L., Milne, P. A., Ridenhour, K. I., Smith, N., Robles, P. S., Kwok, L. A., Schwab, M., Gromadzki, M., Buckley, D. A. H., Itagaki, K., Hiramatsu, D., Chomiuk, L., Lundqvist, P., Haislip, J., Kouprianov, V., Reichart, D. E., 2023, ApJL, 953 ([ADS link](#))
- SN 2022ACKO: THE FIRST EARLY FAR-ULTRAVIOLET SPECTRA OF A TYPE IIP SUPERNOVA
Bostroem, K. A., Dessart, L., Hillier, D. J., Lundquist, M., Andrews, J. E., Sand, D. J., Dong, Y., Valenti, S., Haislip, J., Hoang, E. T., Hosseinzadeh, G., Janzen, D., Jencson, J. E., Jha, S. W., Kouprianov, V., Pearson, J., Meza Retamal, N. E., Reichart, D. E., **Shrestha, M.**, Ashall, C., Baron, E., Brown, P. J., DerKacy, J. M., Farah, J., Galbany, L., Gonzalez Hernandez, J. I., Green, E., Hoeflich, P., Howell, D. A., Kwok, L. A., McCully, C., Muller-Bravo, T. E., Newsome, M., Padilla Gonzalez, E., Pellegrino, C., Rho, J., Rowe, M., Schwab, M., Shahbandeh, M., Smith, N., Strader, J., Terreran, G., Van Dyk, S. D., Wyatt, S., 2023, ApJL, 953 ([ADS link](#))
 - SHOCK SHAPING? NEBULAR SPECTROSCOPY OF NOVA V906 CARINAE
Harvey, É. J., Aydi, E., Izzo, L., Morisset, C., Darnley, M. J., Fitzgerald, K., Molaro, P., Murphy-Glasyher, F., Redman, M. P., **Shrestha, M.**, 2023, MNRAS, 521 ([ADS link](#))
 - GRB MINIMUM VARIABILITY TIMESCALE WITH INSIGHT-HXMT AND SWIFT. IMPLICATIONS FOR PROGENITOR MODELS, DISSIPATION PHYSICS, AND GRB CLASSIFICATIONS
Camisasca, A. E., Guidorzi, C., Amati, L., Frontera, F., Song, X. Y., Xiao, S., Xiong, S. L., Zhang, S. N., Margutti, R., Kobayashi, S., Mundell, C. G., Ge, M. Y., Gomboc, A., Jia, S. M., Jordana-Mitjans, N., Li, C. K., Li, X. B., Maccary, R., **Shrestha, M.**, Xue, W. C., Zhang, S., 2023, A&A, 671 ([ADS link](#))
 - OPTICAL POLARIMETRY OF THE MAY 2022 LUNAR ECLIPSE
Steele, I. A., Wiersema, K., McCall, C., Newsam, A., **Shrestha, M.**, 2023, MNRAS, 518 ([ADS link](#))
 - A SHORT GAMMA-RAY BURST FROM A PROTOMAGNETAR REMNANT
Jordana-Mitjans, N., Mundell, C. G., Guidorzi, C., Smith, R. J., Ramírez-Ruiz, E., Metzger, B. D., Kobayashi, S., Gomboc, A., Steele, I. A., **Shrestha, M.**, Marongiu, M., Rossi, A., Rothberg, B., 2022, ApJ, 939 ([ADS link](#))
 - MODELING THE OPTICAL TO ULTRAVIOLET POLARIMETRIC VARIABILITY FROM THOMSON SCATTERING IN COLLIDING-WIND BINARIES
Ignace, R., Fullard, A., **Shrestha, M.**, Nazé, Y., Gayley, K., Hoffman, J. L., Lomax, J. R., St-Louis, N., 2022, ApJ, 933 ([ADS link](#))
 - NEW MASS ESTIMATES FOR MASSIVE BINARY SYSTEMS: A PROBABILISTIC APPROACH USING POLARIMETRIC RADIATIVE TRANSFER
Fullard, A. G., O'Brien, J. T., Kerzendorf, W. E., **Shrestha, M.**, Hoffman, J. L., Ignace, R., van der Smagt, P., 2022, ApJ, 930 ([ADS link](#))
 - BLACK HOLE SPIN-ORBIT MISALIGNMENT IN THE X-RAY BINARY MAXI J1820+070
Poutanen, J., Veledina, A., Berdyugin, A. V., Berdyugina, S. V., Jermak, H., Jonker, P. G., Kajava, J. J. E., Kosenkov, I. A., Kravtsov, V., Piirola, V., Shrestha, M., Perez Torres, M. A., Tsygankov, S. S., 2022, Sci, 375 ([ADS link](#))
 - COHERENCE SCALE OF MAGNETIC FIELDS GENERATED IN EARLY-TIME FORWARD SHOCKS OF GRBS
Jordana-Mitjans, N., Mundell, C. G., Smith, R. J., Guidorzi, C., Marongiu, M., Kobayashi, S., Gomboc, A., **Shrestha, M.**, Steele, I. A., 2021, MNRAS, 505 ([ADS link](#))
 - LOWLY POLARIZED LIGHT FROM A HIGHLY MAGNETIZED JET OF GRB 190114C
Jordana-Mitjans, N., Mundell, C. G., Kobayashi, S., Smith, R. J., Guidorzi, C., Steele, I. A., **Shrestha, M.**, 2022, MNRAS, 511 ([ADS link](#))

M., Gomboc, A., Marongiu, M., Martone, R., Lipunov, V., Gorbovskoy, E. S., Buckley, D. A. H., Rebolo, R., Budnev, N. M., 2020, ApJ, 892 ([ADS link](#))

- POLARIZATION OBSERVATIONS AND MODELS CONSTRAIN THE PROPERTIES OF THE BOW SHOCK AROUND HD 230561
Lin, A. A., **Shrestha, M.**, Wolfe, T. M., Hoffman, J. L., Stencel, R. E., 2019, RNAAS, 3 ([ADS link](#))

Reviewing and Evaluation

- Referee for journal: A&A, MNRAS, APJ
- PhD Admission committee member at Astrophysics Research Institute, Liverpool 2021
- HST external review panel
- Liverpool Telescope observing time proposal external review

Selected Telescope time and Grants

- MMT semester 2023B *Rapid Follow-up of Very Young Supernovae and Gamma-ray Bursts with MMT/Binospec+MMIRS*
- MMT semester 2023A *Enabling Rapid Target of Opportunity Observations at the MMT using MMIRS*
- MMT semester 2023A *Rapid Spectroscopic Follow-up of Very Young Supernovae with MMT+Binospec*
- JWST Cycle 2 (co-I with PI David J. Sand) *Is there enough? Cosmic dust formation in normal core-collapse supernovae in the first 5 years post-explosion*
- LT semester 2020A, 2020B, 2021A, 2021B *Polarimetry of KIC 8462582 - studying the structure of the surrounding medium.*
- LT semester 2020B, 2021A, 2021B *A pilot study of bow shock polarization to understand dust properties of local ISM*
- Gemini semester 2016B (co-I with PI Hilding Neilson) *Probe wind structure of classical Cepheids*
- AAS international travel grant 2018
- Dissertation Fellowship, University of Denver (\$2500) 2016-2017
- American Astronomical Society FAMOUS travel grant (\$500) 2016
- Doctoral Fellowship for Inclusive Engagement, University of Denver (\$3000) 2015-2016
- AAS international travel grant 2015
- Sigma Xi research grant (\$2495) 2014
- NSM Dean's Doctoral Fellowship, University of Denver 2012-2013

SERVICE

- Co-chair of Transient session in EAS 2021
- SOC of Fast and Faint Transients in NAM 2021
- SOC of Going Green in NAM 2021
- PhD admission committee at LJMU 2021
- SOC of Kathmandu Astrophysics School 2020 & 2018
- Tutor for GROWTH Astronomy School 2020

INVITED TALKS

M. Shrestha, "A new polarimetric approach to GRB jets and kilonovae emission in the era of gravitational waves", *Astronomy Seminar*, Ohio State University, January 18, 2022

M. Shrestha, "Novel polarimetric technique to constrain the magnetic field structure and strength of Gamma-ray burst jets", *Astronomy Seminar*, Michigan State University, April 14, 2021

M. Shrestha, "Novel polarimetric technique to constrain the magnetic field structure and strength of Gamma-ray burst jets", *Astronomy Seminar*, Carnegie Observatories, April 2, 2021

M. Shrestha, "Review on polarimetry on winds of massive stars, interaction with the ISM", *IAU Symposium 360 Astropol 2020*, Hiroshima, Japan, March 22-26, 2021

M. Shrestha, “Novel polarimetric technique to constrain the magnetic field and geometry of Gamma-ray burst jets”, *Colloquium, Department of Physics and Astronomy*, University of Denver, CO, October 10, 2020

M. Shrestha, “Polarization of stellar wind bow shocks”, *Colloquium, Department of Physics and Astronomy*, Colorado College, CO, May 11, 2018

M. Shrestha, “Polarization study of stellar wind bow shock nebulae to understand the properties of environment of massive stars”, *Colloquium, Department of Physics and Astronomy*, University of Wyoming, Laramie, CO, March 23, 2018

M. Shrestha, “Polarization Signatures of Stellar Wind Bow Shocks”, *Stars and planets group meeting*, University of Toronto, Toronto, Canada, February 19, 2016

M. Shrestha, “Polarization Signatures of Stellar Bow Shock”, *Colloquium, Department of Physics & Astronomy, East Tennessee State University*, Johnson City, TN, March 16, 2015

CONTRIBUTED TALKS

M. Shrestha, “Piecing together the long gamma-ray burst’s progenitor puzzle”, *The Transient and Variable Universe 2023*, Urbana-Champaign, USA, June 22, 2023

M. Shrestha, “Polarized bow shocks reveal features of the winds and environment of massive stars”, Max Planck Institute of Solar Research, Gottingen, Germany, April 26, 2018

M. Shrestha, “Polarized bow shocks reveal features of the winds and environments of massive stars”, *231st Meeting of the AAS*, Washington DC, January 2018

M. Shrestha, “Polarization Behavior of Stellar Wind Bow Shocks”, *Annual Meeting of the APS Four Corners Section*, Colorado State University, CO, October 2017

M. Shrestha, “Understanding the Relation of Progenitors and Supernovae Through the Study of Circumstellar Materials”, *Annual Meeting of the APS Four Corners Section*, University of Denver, CO, October 2013
M. Shrestha, and M. M. Beaky, “Identifying Delta Scuti Variable in Eclipsing Binaries.”, *Student Research Conference*, Truman State University, MO, April 2012

M. Shrestha, and M. Goggin, “Down Conversion in Biaxial Crystal”, *Student Research Conference*, Truman State University, MO, April 2012

M. Shrestha, and M. M. Goggin, “Down Conversion in Biaxial Crystal”, *National Conference of Undergraduate Research (NCUR)*, Weber State University, UT, March 2012

M. Shrestha, and M. M. Beaky, “Identifying Delta Scuti Variable in Eclipsing Binaries.”, *TruSymposium*, Truman State University, MO, August 2011

POSTERS PRESENTATIONS

M. Shrestha, I.A. Steele, A. Piascik, H. Jermak, “MOPTOP: Polarimetry for time domain astrophysics”, *EEU2019*, ESO Garching, Germany, September 2019

M. Shrestha, J.L. Hoffman, H.R. Neilson, R. Ignace, “Polarization signatures of bow shocks in stellar wind”, *Physics of Evolved Stars*, Nice, France, June 2015

A.A. Lin, **M. Shrestha**, T. Wolfe, R.E. Stencel, J.L. Hoffman, “Studying the Polarization of Astrophysical Bow Shocks”, *Annual Meeting of the APS Four Corners Section*, Colorado State University, CO, October 2017

M. Shrestha, J.L. Hoffman, H.R. Neilson, R. Ignace, “Study of polarization signature of bow shocks to constrain the properties of stellar wind”, *229th Meeting of the AAS*, Grapevine, TX, January 2017

M. Shrestha, J.L. Hoffman, H.R. Neilson, R. Ignace, “Polarization signatures of bow shocks in stellar wind”, *Physics of Evolved Stars*, Nice, France, June 2015

M. Shrestha, J.L. Hoffman, H.R. Neilson, R. Ignace, “Polarization of circumstellar bow shock due to electron scattering”, *Supercomputing 2014*, New Orleans, LA, November 2014 **M. Shrestha**, J.L. Hoffman, H.R. Neilson, R. Ignace, “Polarization of circumstellar bow shock due to electron scattering”, *Rocky Mountain HPC Symposium*, University of Colorado-Boulder, CO, November 2014, Honorable Mention

H. R. Neilson, R. Ignace, **M. Shrestha**, J.L. Hoffman, J. Mackey, “Modelling near-IR polarization to constrain stellar wind bow shocks”, *Massive Stars: From alpha to Omega*, Rhodes, Greece, June 2013

M. Shrestha, “Understanding the Relation of Progenitors and Supernovae Through the Study of Circumstellar Materials”, *Colloquium, Department of Physics & Astronomy*, University of Denver, CO, March 27, 2013

M. Shrestha, J.L. Hoffman, H.R. Neilson, R. Ignace, “Polarization of circumstellar bow shock due to electron scattering”, *223rd Meeting of the AAS*, Washington D.C., January 2013

TEACHING AND MENTORING EXPERIENCE

University of Arizona

Tucson, AZ

• Mentoring Graduate student via Women in Science & Engineering group 2023

• Lecture on Gamma-ray burst physics in Pima School 2022

University of Denver

Denver, CO

Graduate Teaching Assistant

21st Century Physics and Astronomy: for non-science majors

2016-2018

21st Century Physics & Astronomy lab

2016 - 2017

- Provide a short lecture before the hands-on part
- Guide students through hand on astronomy and physics experiments both in the lab and outdoor labs
- Hold office hours and provide support at the help desk
- Grade lab reports, pre-labs, homework and exams
- Develop new lab experiments to provide observational and data reduction opportunities to students

General Physics: algebra-based physics for science majors

2014-2015

- Taught labs, held office hours and answered questions at the help desk
- Graded lab reports, pre-labs, homework and exams

Mentored undergraduate students

Denver, CO

- Advised Austin A. Lin in his senior thesis project *Polarization observation of the unresolved bow shock of HD 230561* 2017-2018

- Helped several undergraduate students in Dr Jennifer L. Hoffman’s group with Python Programming and physics concepts 2017-2018

- Volunteered as a tutor to help students with hands-on sessions 2020

Kathmandu Astrophysics School 2020

Online

- SOC, lecturer for an online school, gave lectures on polarization observational technique for time-domain astronomy, provided mentorship to students, engaged in student selection process 2020

Kathmandu Astrophysics School 2018

Pokhara, Nepal

- SOC, junior lecturer for an 8-day long summer school, gave lectures on stellar physics, provided mentorship to students, engaged in student selection process 2018

University of Denver SciTech - Camp

Denver, CO

- Ran DU SciTech - Camp for middle school girls along with professors and other graduate students

2016 & 2017

Truman State University

Kirksville, MO

Undergraduate Teaching Assistant

2009-2010

- Graded homework and quizzes for an undergraduate introductory class

Physics Tutor

2009-2012

- Provided group tutoring for undergraduate physics students

Interviews and public talks

- Public talk STEWARD'S 100-YEAR ANNIVERSARY OF THE DOME OPEN HOUSE, April 22, 2022
- Two interviews for local Arizona National Public Radio on GRB 221009A
- Press release on GRB 221009A by University of Arizona

TECHNICAL SKILLS

Programming Experience

- Monte Carlo Radiative Transfer method
- Programming Languages: Fortran 90, Python, IDL, Mathematica, Gnuplot, Latex, Bash

Observational and Data Reduction Experience

- Created data reduction pipeline for RINGO3 and MOPTOP polarimeter on Liverpool Telescope
- Worked on data analysis of gamma-ray bursts
- Operated 14-inch telescope at the Truman Observatory for the whole summer of 2011
- Collected data of delta Scuti eclipsing binaries candidates using remote Tzec Maun telescopes

PROFESSIONAL AFFILIATIONS

- Member, American Astronomical Society (2023-)
- Member, Royal Astronomical Society (2021-)
- Member, European Astronomical Society (2021-)
- Member, American Astronomical Society (2014-2018)
- Member, American Physical Society (2014-2018)
- Member, Sigma Xi (2014-2018)
- President, Women in Physics Club at Truman State University (2012)

SUMMER SCHOOL

San Diego Supercomputer Center Summer Institute, San Diego, USA, July 31 - August 4, 2017

- Selected for the summer institute and awarded room and board scholarship

Monte Carlo Summer School, Saint Andrews, Scotland, August 23-28, 2015

Outreach Activities

University of Denver

Denver, CO

- Operated solar telescope, taught middle school students to use Galileoscope, and explained physics behind telescopes at Observatory Park. 2017
- Did physics related demonstrations in STEMosphere event 2015
- Operated sun spotter and educated 6th grade girls about the way lenses work 2014
- Operated sun spotter and Galileoscope at Diversity Summit's 2nd annual day of action 2014
- Science Fair Judge 2013

Merrill Middle School

- Science Fair Judge

Denver, CO

2013

Public Library

- Educated primary school students about density of material

Kirksville, MO

2012