

Omnarayani Nayak Publication List

Number of First-Author Published Papers: 8

Number of Total Published Papers: 44

H-Index of all Papers: 20

Total Citation: 2404

First Author Refereed Papers

I have eight first-author papers, four other JWST related papers I have made major contributions to by mentoring graduate students and postdoctoral researchers, and two other papers with major contributions relating to other ground- and space-based missions and observatories. My independent scientific research makes use of several missions (JWST, Hubble, Chandra, ALMA, SOFIA, Keck). My leadership has ensured that data from multiple large missions are used effectively, and the results are produced expeditiously, which led to contributions for 6 technical papers in relation to commissioning the James Webb Space Telescope. I have been PI of ALMA and SOFIA proposals and had major contributions to proposals with Chandra Observatory and the Magellan FIRE echellette spectrograph. I have led several teams and used multiple observing modes and data formats in pursuing these projects and papers.

“Embedded Young Stellar Objects near H72.97-69.39, a forming Super Star Cluster in N79,” O. Nayak, C. Nally, A. S. Hirschauer, et. al. 2024, ApJ, 975, 262

“JWST Mid-infrared Spectroscopy Resolves Gas, Dust and Ice in Young Stellar Objects in the Large Magellanic Cloud,” O. Nayak, A. S. Hirschauer, P. J. Kavanagh, et al. 2024, ApJ, 963, 94

“Massive Star Formation in the Tarantula Nebula,” O. Nayak, T. Wong, M. Meixner, et al. 2023, ApJ, 944, 26

“Stellar Feedback at the Earliest Stage of Massive Star Formation,” O. Nayak, M. Meixner, Y. Okada, et al. 2021, ApJ, 907, 106

“ALMA Reveals Kinematics of Potential Super Star Cluster H72.97-69.39 in N79,” O. Nayak, M. Meixner, R. Indebetouw, et al. 2019, ApJ, 877, 135

“Large Magellanic Cloud: Extreme Star Formation in a Low-Metallicity Environment,” O. Nayak, 2018, PhD Thesis

“Molecular Cloud Structures and Massive Star Formation in N159,” O. Nayak, M. Meixner, Y. Fukui, et al. 2018, ApJ, 854, 154

“Studying Relation Between Star Formation and Molecular Clumps on Sub-parsec Scales in 30 Doradus,” O. Nayak, M. Meixner, R. Indebetouw, et al. 2016, ApJ, 831, 32

Major Contribution For Papers Relating to JWST

My JWST NIRCам and MIRI python code for data reduction and background subtraction were the basis for maximizing scientific output presented in these published papers.

“A Mid-Infrared Spectroscopic Study of Young Stellar Objects in the SMC Region of NGC 346: JWST Detects Dust, Accretion, Ices, and Outflows,” N. Habel, O. Nayak, P. J. Kavanagh et al. 2025, ApJ 995, 22

Authors: N. Habel, **O. Nayak**, P. J. Kavanagh, O. C. Jones, M. Meixner, G. De Marchi, L. Lenkić, A. S. Hirschauer, K. Biazzo, J. Jaspers, C. Nally, M. Robberto, C. Rodgers, E. Sabbi, B. A. Sargent, P. Zeidler

“JWST NIRCам Imaging of NGC 4258: I. Observation Overview,” T. Fischer, N. Cothard, O. Nayak, et al. 2025, ApJ, 993, 153

Authors: T. Fischer, N. Cothard, **O. Nayak**, H. Schmitt, E. Smith, J. Glenn

“Imaging of 1 Zwicky 18: I. Strategy and First Results of Dusty Stellar Populations,” A. Hirschauer, N. Crouzet, N. Habel, et al. 2024, AJ, 168, 23

Authors: A. Hirschauer, N. Crouzet, N. Habel, L. Lenkić, C. Nally, O. C. Jones, G. Bortolini, M. L. Boyer, K. Justtanont, M. Meixner, G. Östlin, G. S. Wright, R. Azzollini, J. A. D. L. Blommaert, B. Brandl, L. Decin, **O. Nayak**, P. Royer, B. A. Sargent, P. van der Werf

“Young Stellar Objects in NGC 346: A JWST NIRCам/MIRI Imaging Survey,” N. Habel, C. Nally, L. Lenkić, et al. 2024, ApJ, 971, 108

Authors: N. Habel, C. Nally, L. Lenkić, M. Meixner, G. De Marchi, P. J. Kavanagh, K. Fahrion, **O. Nayak**, A. S. Hirschauer, O. C. Jones, K. Biazzo, B. R. Brandl, J. Jaspers, K. M. Pontoppidan, M. Robberto, C. Rogers, E. Sabbi, B. A. Sargent, D. R. Soderblom, P. Ziedler

“A JWST/MIRI and NIRCам Analysis of Young Stellar Object Population in the Spitzer I region of NGC 6822,” L. Lenkić, C. Nally, O. C. Jones et al. 2024, ApJ, 967, 110

Authors: L. Lenkić, C. Nally, O. C. Jones, M. L. Boyer, P. J. Kavanagh, N. Habel, **O. Nayak**, A. S. Hirschauer, M. Meixner, B. A. Sargent, T. Temim

“JWST MIRI and NIRCам Unveil Previously Unseen Infrared Stellar Population in NGC 6822,” C. Nally, O. C. Jones, L. Lenkić, et al. 2024, MNRAS, 531, 183

Authors: C. Nally, O. C. Jones, L. Lenkić, N. Habel, A. S. Hirschauer, M. Meixner, P. J. Kavanagh, M. L. Boyer, A. M. N. Ferguson, B. A. Sargent, **O. Nayak**, T. Temim

Major Contribution Papers Relating to Other Missions and Observatories

My thesis led to the discovery of super star cluster H72.97-69.39 in the Large Magellanic Cloud. I co-wrote the Magellan Folded-port InfraRed Echelette (FIRE) proposal with M. Reiter for ground-based near-infrared spectra of this super star cluster. Additionally, I identified all the protostars in the Large Magellanic Cloud using archival Spitzer and Herschel observations for the paper led by B. Ochsendorf.

“Unveiling the Nature of Candidate High-Mass Young Stellar Objects in the Magellanic Clouds with near-IR spectroscopy,” M. Reiter, O. Nayak, M. Meixner, et al. 2019, MNRAS, 483, 5211

Authors: M. Reiter, **O. Nayak**, M. Meixner, O. C. Jones

“The Star Forming Complex LMC-N79 as a Future Rival to 30 Doradus,” B. Ochsendorf, H. Zinnecker, O. Nayak, et al. 2017, NatAs, 1E, 260

Authors: B. Ochsendorf, H. Zinnecker, **O. Nayak**, J. Bally, M. Meixner, O. C. Jones, R. Indebetouw, M. Rahman

Other Refereed Papers

“Taming the Tarantula: How Stellar Wind Feedback Shapes Gas and Dust in 30 Doradus,” J. A.

Rodriguez, L. A. Lopez, L. Lancaster et al., submitted to ApJ

Authors: J. A. Rodriguez, L. A. Lopez, L. Lancaster, A. L. Rosen, **O. Nayak**, S. Lopez, T. Holland-Ashford, T. L. Webb

“ALESS-JWST: Joint (sub-)kiloparsec JWST and ALMA imaging of $z \sim 3$ Submillimeter Galaxies Reveals Heavily Obscured Buldge Formation Events,” J. A. Hodge, E.de Cunha, S. Kendrew et al. 2025, ApJ, 978, 165

Authors: J. A. Hodge, E.de Cunha, S. Kendrew, J. Li, I. Smail, B. A. Westoby, **O. Nayak**, M. Swinbank, C. C. Chen, F. Walter, P. van der Werf, M. Crafaft, A. Battisti, W. N. Brandt, G. Calistro Rivera, S. C. Chapman, P. Cox, H. Dannerbauer, R. Decarli, M. Frias Castillo, T. R. Greve, K. K. Knudsen, S. Leslie, K. M. Menten, M. Rybak, E. Schinnerer, J. L. Wardlow, A. Weiss

“First Detection of Ices in Intermediate-mass Young Stellar Objects Beyond the Milky Way,” G. De Marchi, N. Habel, M. Meixner et al. 2025, ApJ, 992, 203

Authors: G. De Marchi, N. Habel, M. Meixner, K. Biazzo, G. Giardino, E. Sabbi, C. Rodgers, J. Jaspers, M. Robberto, P. Zeidler, O. C. Jones, K. Fahrion, A. S. Hirschauer, C. D. Keyes, D. R. Soderblom, L. Lenkić, **O. Nayak**, B. Brandl

“Detection of Diffuse Hot Gas Around the Young, Potential Superstar Cluster H72.97-69.39,” T. L. Webb, J. A. Rodriguez, L. A. Lopez et al. 2024, ApJ, 977, 45

Authors: T. L. Webb, J. A. Rodriguez, L. A. Lopez, A. L. Rosen, L. Lancaster, **O. Nayak**, A. F. McLeod, P. Pandey, G. M. Olivier

“Emission Lines Due to Ionizing Radiation from a Compact Objects in the Remnant of Supernova 1987A,” C. Fransson, M. J. Barlow, P. J. Kavanagh, et al. 2024, Sci, 383, 898

Authors: C. Fransson, M. J. Barlow, P. J. Kavanagh, J. Larsson, O. C. Jones, B. Sargent, M. Meixner, P. Bouchet, T. Temin, G.S. Wright, J. A. D. L. Blommaert, N. Habel, A. S. Hirschauer, J. Hjorth, L. Lenkić, T. Tikkani, R. Wesson, A. Coulais, O. D. Fox, R. Gastaud, A. Glasse, J. Jaspers, O. Krause, R. M Lau, **O. Nayak**, A. Rest, L. Colina, E. f. Van Dishoeck, M. Güdel, Th. Henning, P. O. Lagage, G. Östlin, T. P. Ray, B. Vandenbussche

“The Size-Linewidth Relation and Signatures of Feedback from Quiescent to Active Star Forming Regions in the LMC,” A. Green, T. Wong, R. Indebetouw, et al. 2024, ApJ, 966, 51

Authors: A. Green, T. Wong, R. Indebetouw, **O. Nayak**, A. Bolatto, E. Tarantino, M. Rubio, S. C. Madden, A. S. Hirschauer

“Protoplanetary Disks Around Sun-like Stars Appear to Live Longer When the Metallicity is Low ,” G. De Marchi, G. Giardino, K. Biazzo, et al. 2024 ApJ, 977, 214

Authors: G. De Marchi, G. Giardino, K. Biazzo, N. Panagia, E. Sabbi, T. L. Beck, M. Robberto, P. Zeidler, O. C. Jones, M. Meixner, K. Fahrion, N. Habel, C. Nally, A. S. Hirschauer, D. R. Soderblom, **O. Nayak**, C. Rogers, B. Brandl, C. D. Keyes

“JWST MIRI Imager observations of Supernova 1987A,” P. Bouchet, R. Gastaud, A. Coulais, et al. 2024, ApJ, 965, 51

Authors: P. Bouchet, R. Gastaud, A. Coulais, P. J. Kavanagh, A. S. Hirschauer, T. Tikkanen, M. J. Barlow, C. Fransson, A. Rest, J.A.D.L. Blommaert, O. D. Fox, A. Glasse, N. Habel, J. Hjorth, O. C. Jones, O. Krause, J. Larsson, R. M. Lau, L. Lenkić, M. Meixner, **O. Nayak**, B. A. Sargent

“Ejecta, Rings, and Dust in SN 1987A with JWST MIRI/MRS,” O. C. Jones, P. J. Kavanagh, M. J. Barlow, et al. 2023, ApJ, 958, 95

Authors: O.C. Jones, P. J. Kavanagh, M. J. Barlow, T. Temim, C. Fransson, J. Larsson, J. A. D. L. Blommaert, M. Meixner, R. M. Lau, B. Sargent, P. Bouchet, J. Hjorth, G. S. Wright, A. Coulais, O. D. Fox, R. Gastaud, A. Glasse, N. Habel, A. S. Hirschauer, J. Jaspers, O. Krause, L. Lenkić, **O. Nayak**, A. Rest, T. Tikkanen, R. Wesson, L. Colina, E. F. van Dishoeck, M. Güdel, Th. Henning, P. O. Lagage, T. P. Ray, B. Vandenbussche

“The Mid-infrared Instrument for JWST and Its In-flight Performance,” G. S. Wright and the JWST Commissioning Team Including **O. Nayak**, 2023, PASP, 135d, 8003W

“The James Webb Space Telescope Mission,” J. Gardner and the JWST Commissioning Team Including **O. Nayak**, 2023, PASP, 135f, 8001G

“The Science Performance of JWST as Characterized in Commissioning,” J. Rigby and the JWST Commissioning Team Including **O. Nayak**, 2023, PASP, 135d, 8001R

“Spectroscopic Time Series Performance and the Mid-infrared Instrument on the JWST,” J. Bouwman and the JWST MIRI Team Including **O. Nayak**, 2023, PASP, 135c, 8002B

“JWST NIRSpec Observations of Supernova 1987A – From the Inner Ejecta to the Reverse Shock,” J. Larsson, C. Fransson, B. Sargent, et al. 2023, ApJ, 949, 27

Authors: J. Larsson, C. Fransson, B. Sargent, O. C. Jones, M. J. Barlow, P. Bouchet, M. Meixner, J. A. D. L. Blommaert, A. Coulais, O. D. Fox, R. Gastaud, A. Glasse, N. Habel, A. S. Hirschauer, J. Hjorth, J. Jaspers, P. J. Kavanagh, O. Krause, R. M. Lau, L. Lenkic, **O. Nayak**, A. Rest, T. Temin, T. Tikkanen, R. Wesson, G. S. Wright

“Observations of the Planetary Nebula SMP LMC 058 with the JWST MIRI Medium Resolution Spectrometer,” O. C. Jones and the JWST MIRI Team Including **O. Nayak**, 2023, MNRAS, 523, 2519

“JWST/NIRCam Detections of dusty subsolar-mass young stellar objects in the Small Magellanic Cloud,” O. C. Jones, C. Nally, N. Habel, et al. 2023, NatAs, 7, 694

Authors: O. C. Jones, C. Nally, N. Habel, L. Lenkic, K. Fahrion, A. S. Hirschauer, L. Chu, M. Meixner, G. De Marchi, **O. Nayak**, M. Robberto, E. Sabbi, P. Zeidler, C. A. de Oliveria, T. Beck, K. Biazzo, B. Brandl, G. Giardino, T. Jerabkova, C. Keyes, J. Muzerolle, N. Panagia, K. Pontoppidan, C. Rogers, B. A. Sargent, D. Soderblom

“JWST MIRI/MRS in-flight absolute flux calibration and tailored fringe correction for unresolved sources,” D. Gasman and the JWST MIRI/MRS Team Including **O. Nayak**, 2023, A&A, 673, 102

“The 30 Doradus Molecular Cloud at 0.4 Parsec Resolution with ALMA: Physical Properties and the Boundedness of CO Emitting Structures,” T. Wong, L. Oudshoorn, E. Sofovich, et al. 2022, *ApJ*, 932, 47
Authors: T. Wong, L. Oudshoorn, E. Sofovich, A. Green, C. Shah, R. Indebetouw, M. Meixner, A. Hacar, **O. Nayak**, K. Tokuda, A. D. Bolatto, M. Chevance, G. De Marchi, Y. Fukui, A. Hirschauer, K. E. Jameson, V. Kalari, V. Lebouteiller, L. W. Looney, S. C. Madden, T. Onishi, J. Roman-Duval, M. Rubio, A. G. G. M. Tielens

“An ALMA study of the $\sim 10^4 M_\odot$ molecular clump N159W-North in the Large Magellanic Cloud: A possible gas flow penetrating one of the most massive protocluster systems in the Local Group,” K. Tokuda, T. Minami, Y. Fukui, et al. 2022, *ApJ*, 933, 20
Authors: K. Tokuda, T. Minami, Y. Fukui, T. Inoue, T. Nishikora, K. Tsuge, S. Zahorecz, H. Sano, A. Konishi, R. Chen, M. Sewilo, S. C. Madden, **O. Nayak**, K. Saigo, A. Nishimura, K. E. I. Tanaka, T. Sawada, K. Tachihara, A. Kawamura, T. Onishi

“The Lick Observatory Supernova Search Follow-Up Program: Photometry Data Release of 70 Stripped-Envelope Supernovae,” W. Zheng, B. E. Stahl, T. de Jaeger, et al. 2022, *MNRAS*, 512, 3195
Authors: W. Zheng, B. E. Stahl, T. de Jaeger, A. V. Filippenko, S. Wang, W. Gan, T. G. Brink, I. Altunin, R. Baer-Way, A. Bigley, K. Blanchard, P. K. Blanchard, J. Bradley, S. K. Cargill, C. Casper, T. Chapman, V. Chander, S. Channa, B. Choi, N. Choksi, M. Chu, K. I. Clubb, D. P. Cohen, P. A. Dalba, A. de Graw, M. Ellison, E. Falcon, O. D. Fox, K. Fuller, M. Ganeshalingam, N. Girish, C. Gould, J. R. Gross, G. Halevi, A. Halle, K. T. Hayakawa, R. Hardy, H. Hestenes, A. M. Hoffman, M. Hyland, T. Lowe, B. T. Jeffers, C. Jennings, M. T. Kandrashoff, A. Khodanian, M. Kim, H. Kim, M. E. Kislak, M. de Kouchkovsky, D. Krishnan, S. Kumar, S. G. Kumar, J. Leja, K. J. Leonard, G. Z. Li, W. Li, J. Lian, E. Liu, P. Lu, E. Ma, M. N. Mason, M. May, K. McAllister, E. McGinness, S. Modak, J. Molloy, Y. S. Murakami, **O. Nayak**, D. Perera, K. Pina, D. Punjabi, A. Rikhter, T. W. Ross, J. Sipple, C. Soler, A. Springmann, S. Stegman, H. Stephens, H. Sunseri, K. Tang, S. Taylor, P. Trasher, S. D. Van Dyk, X. Wang, J. Wayland, A. Wilkins, A. Yagubyan, H. Yuk, S. Yunus, K. D. Zhang

“Evolution of Feedback in HII Regions,” G. M. Olivier, L. A. Lopez, A. L. Rosen, et al. 2021, *ApJ*, 908, 68
Authors: G. M. Olivier, L. A. Lopez, A. L. Rosen, **O. Nayak**, M. Reiter, M. R. Krumholz, A. D. Bolatto

“The Stellar Content of H72.97-69.39, a Potential Super Star Cluster in the Making,” M. Andersen, H. Zinnecker, A. Hirschauer, et al. 2021, *AJ*, 161, 206
Authors: M. Andersen, H. Zinnecker, A. Hirschauer, **O. Nayak**, M. Meixner

“An ALMA View of Molecular Filaments in the Large Magellanic Cloud II: An Early Stage of High Mass Star Formation Embedded at Colliding Clouds in N159W-South,” K. Tokuda, Y. Fukui, . Harada, et al. 2019, *ApJ*, 886, 15
Authors: K. Tokuda, Yasuo Fukui, R. Harada, K. Saigo, K. Tachihara, K. Tsuge, T. Inoue, K. Torii, A. Nishimura, S. Zahorecz, **O. Nayak**, M. Meixner, T. Minamidani, A. Kawamura, N. Mizuno, R. Indebetouw, M. Sewilo, S. Madden, M. Galametz, V. Lebouteiller, R. Chen, T. Onishi

“An ALMA View of Molecular Filaments in the Large Magellanic Cloud I: Formation of High-Mass Stars and Pillars in the N159E Papillon Nebula Triggered by a Cloud-Cloud Collision,” Y. Fukui, K. Tokuda, S. Kazuya, et al. 2019, *ApJ*, 886, 14
Authors: Y. Fukui, K. Tokuda, K. Saigo, R. Harada, K. Tachihara, K. Tsuge, T. Inoue, K. Torii, A. Nishimura, S. Zahorecz, **O. Nayak**, M. Meixner, T. Minamidani, A. Kawamura, N. Mizuno, R. Indebetouw, M. Sewilo, S. Madden, M. Galametz, V. Lebouteiller, R. Chen, T. Onishi

“Formation of High-Mass Stars in an Isolated Environment in the Large Magellanic Cloud,” R. Harada, T. Onishi, K. Tokuda, et al. 2019, PASJ, 71, 44

Authors: R. Harada, T. Onishi, K. Tokuda, S. Zahorecz, A. Huges, M. Meixner, M. Sewilo, R. Indebetouw, **O. Nayak**, Y. Fukui, A. Kawamura, K. Saigo, T. Wong, J. P. Bernard, I. W. Stephens

“Kinematic Structure of Molecular Gas around High-mass Star YSO, Papillon Nebula, in N159 East in the Large Magellanic Cloud,” K. Saigo, T. Onishi, O. Nayak, et al. 2017, ApJ, 835, 108

Authors: K. Saigo, T. Onishi, **O. Nayak**, M. Meixner, K. Tokuda, R. Harada, Y. Morioka, M. Sewilo, R. Indebetouw, K. Torii, A. Kawamura, A. Ohama, Y. Hattori, H. Yamamoto, K. Tachihara, T. Minamidani, T. Inoue, S. Madden, M. Galametz, V. Lebouteiller, R. Chen, N. Mizuno, Y. Fukui

“Radiative and mechanical feedback into the molecular gas in the Large Magellanic Cloud. I. N159W,” M. Y. Lee, S. Madden, V. Lebouteiller, et al. 2016, A&A, 596, A85

Authors: M. Y. Lee, S. Madden, V. Lebouteiller, A. Gusdorf, B. Godard, R. Wu, M. Galametz, D. Cormier, F. Le Petit, E. Roueff, E. Bron, L. Carlson, M. Chevance, Y. Fukui, G. Galliano, S. Hony, A. Huges, R. Indebetouw, F. Israel, A. Kawamura, J. Le Bourlot, P. Lesaffre, M. Meixner, E. Muller, **O. Nayak**, T. Onishi, J. Roman-Duval, M. Sewilo

“High Mass Star Formation Triggered by Collisions between CO Filaments in N159 West in the Large Magellanic Cloud,” Y. Fukui, R. Harada, K. Tokuda, et al. 2015, ApJ, 807, L4

Authors: Y. Fukui, R. Harada, K. Tokuda, Y. Morioka, T. Onishi, K. Torii, A. Ohama, Y. Hattori, **O. Nayak**, M. Meixner, M. Sewilo, R. Indebetouw, A. Kawamura, K. Saigo, H. Yamamoto, K. Tachihara, T. Minamidani, T. Inoue, S. Madden, M. Galametz, V. Lebouteiller, N. Mizuno, R. Chen