

Łukasz Tychoniec

PhD candidate, Leiden Observatory

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EDUCATION

- 09/2016 – 08/2020 **PhD Astronomy** - Leiden University, Leiden, The Netherlands
(planned) *Supervisor:* Prof. Ewine F. van Dishoeck
Thesis: Protostellar jets and disks at the onset of planet formation
- 10/2014 – 07/2016 **MSc Astronomy** - Adam Mickiewicz University, Poznań, Poland
Supervisor: Dr. Agata Karska
Thesis: First stages of star formation in Perseus molecular cloud observed in the infrared and radio wavelengths
- 10/2011 – 06/2014 **BSc Astronomy** - Adam Mickiewicz University, Poznań, Poland
Specialization: Artificial Satellites Applications
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TALKS & PRESENTATIONS (selected)

- Seminars:**
- 09/2017 Toruń Astrophysics/Physics Summer Program (TAPS), Toruń, Poland
- Contributed talks:**
- 09/2019 NOVA network meeting, Amsterdam, The Netherlands
03/2019 NOVA network meeting, Leiden, The Netherlands
07/2018 Astrochemistry - Past, Present, and Future, Pasadena, USA
11/2018 Allegro ALMA day, Leiden, The Netherlands
09/2017 Polish Astronomical Society meeting - Zielona Góra, Poland
09/2016 Shocks 2016 - Toruń, Poland
- Posters:**
- 06/2019 From Stars to Planets II, Gothenburg, Sweden
03/2017 IAU Symposium 332, Astrochemistry VII, Puerto Varas, Chile
09/2016 Shocks 2016, Toruń, Poland
04/2016 Water in the Universe, Katwijk, The Netherlands
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SERVICES

- 2019 - 2020 Mentoring of two Master's student projects in Leiden
2018 - 2019 Contribution to mentoring a student in a Bachelor's project in Toruń, Poland
2016 - 2019 Teaching assistant for a Bachelor's course - Galaxies and Cosmology

2017 - 2018 Co-organizer of the Leiden Observatory PhD interview days
2017 - 2018 Several outreach talks from the primary school up to high school
in my hometown Nowogard, Poland

TRAINING & INTERNSHIPS

06/2019 NOVA 3rd year PhD weekend, Amersfoort, The Netherlands
Soft skills: effective presentation, job applications
11/2017 ALMA data reduction training day
11/2016 NOVA Fall School, course on Extragalactic Astrophysics
Soft skills: time management, science communication,
ethics in science
05 - 08 / 2015 The Leiden/ESA Astrophysics Program for Summer Students
The Netherlands, *Supervisor:* Dr. John Tobin,
Topic: Characterizing Protostellar Disks and Jets with the VLA

SKILLS & EXPERTISE

Observations: ALMA, VLA, APEX data analysis (CASA, GILDAS), ALMA data
calibration and pipeline; preparations of the James Webb Space
Telescope Guaranteed Time Observations within the MIRI European
Consortium
Programming: Writing dedicated modules for analysis of large datasets, data
visualisation, statistical analysis (Python, IDL)
Software: astrochemical modelling (RADEX, CASSIS), Latex, Inkscape
Languages: English (fluent), Polish (native)

SCHOLARSHIPS & AWARDED TELESCOPE TIME

Scholarships:
2015 Scholarship, Polish Minister of Science and Higher Education
Accepted proposals as a PI:
2019 Cycle 7, ALMA, Grade C (12m - 6.8 hrs)
2018 Cycle 6, ALMA, Grade B (7m - 28.8 hrs)
2017 Cycle 5, ALMA, Grade C (12m - 5.7 hrs, 7m - 21 hrs)
Accepted proposals as a co-I:
2017 - 2019 ALMA A-priority: 2 proposals (27 hrs total)
ALMA B-priority: 1 proposal (18.7 hrs total)
ALMA C-priority: 2 proposals (16 hrs total)
2016 - 2019 VLA A-priority (43 hrs total), B-priority (340 hrs total)
2018 SOFIA Priority 2: (8 hrs)

PUBLICATION LIST

First author:

3. Chemical and kinematic structure of extremely high-velocity molecular jets in the Serpens Main star-forming region.
Tychoniec Ł., Hull C. L. H., Kristensen L. E., Le Gouellec V. J. M., van Dishoeck E. F., 2019, accepted to A&A, arXiv:1910.07857.
2. The VLA Nascent Disk And Multiplicity Survey of Perseus Protostars (VANDAM). IV. Free-free emission from protostars: links to infrared properties, outflow tracers, and protostellar disk masses.
Tychoniec Ł., Tobin J. J., Karska A., Chandler C., Dunham M. M., Harris R. J., Kratter K. M., Li Z., Looney, L. W., Melis C., Pérez L. M., Sadavoy S. I., Segura-Cox, D., van Dishoeck E. F., 2018, ApJS, 238, 19.
1. The VLA Nascent Disk And Multiplicity Survey of Perseus Protostars (VANDAM). III. Extended Radio Emission from Protostars in Perseus.
Tychoniec Ł., Tobin J. J., Karska A., Chandler C., Dunham M. M., Li Z., Looney L. W., Segura-Cox D., Harris R. J., Melis C., Sadavoy S. I., 2018, ApJ, 852, 18.

Co-author:

8. The VLA / ALMA Nascent Disk and Multiplicity (VANDAM) Survey of Orion Protostars I. Identifying and Characterizing the Protostellar Content of the OMC2-FIR4 and OMC2-FIR3 Regions.
Tobin J. J., Megeath S. T., van 't Hoff M. L. R., Diaz-Rodriguez, A. K., Reynolds N., Osorio M., Anglada G., Furlan E., Karnath N., Offner S. S. R., Sheehan P., Sadavoy, S. I., Stutz A. M., Fischer W. J., Kama M., Persson M., Di Francesco J., Looney L. W., Watson D. M., Li Z., Stephens I., Chandler C. J., Cox E., Dunham M. M., Kratter K., Kounkel M., Mazur B., Murillo N. M., Patel L., Perez L., Segura-Cox D., Sharma R., Tychoniec Ł., Wyrowski F., 2019, accepted to ApJ, arXiv:1910.00605.
7. Characterizing magnetic field morphologies in three Serpens protostellar cores with ALMA.
Le Gouellec V. J. M., Hull C. L. H., Maury A. J., Girart J. M., Tychoniec Ł., Kristensen L. E., Li Z., Louvet F., Cortes P. C., 2019, accepted to ApJ, arXiv:1909.00046.
6. The Mass Evolution of Protostellar Disks and Envelopes in the Perseus Molecular Cloud.
Andersen B. C., Stephens I. W., Dunham M. W., Pokhrel R., Jørgensen J. K., Frimann S., Segura-Cox D., Myers P. C., Bourke T. L., Tobin J. J. Tychoniec Ł., 2019, ApJ, 873, 54.
5. The Herschel-PACS Legacy of Low-mass Protostars: The Properties of Warm and Hot Gas Components and Their Origin in Far-UV Illuminated Shocks.
Karska A., Kaufman M. J., Kristensen L. E., van Dishoeck E. F., Herczeg G. J., Mottram J. C., Tychoniec Ł., Lindberg J. E., Evans N. J. II, Green J. D., Yang Y., Gusdorf A., Itrich D., Siódmiak N., 2018, ApJS, 235, 30.

4. ALMA Observations of Dust Polarization and Molecular Line Emission from the Class 0 Protostellar Source Serpens SMM1.
Hull C. L. H., Girart J. M., **Tychoniec Ł.**, Rao R., Cortés P. C., Pokhrel R., Zhang Q., Houde M., Dunham M. M., Kristensen L. E., Lai S., Li Z., Plambeck R. L., 2017, *ApJ*, 847, 92.
3. Against the biases in spins and shapes of asteroids.
Marciniak A., Pilcher F., Oszkiewicz D., Santana-Ros T., Urakawa S., Fauvaud S., Kankiewicz P., **Tychoniec Ł.**, Fauvaud M., Hirsch R., Horbowicz J., Kamiński K., Konstanciak I., Kosturkiewicz E., Murawiecka M., Nadolny J., Nishiyama K., Okumura S., Polińska M., Richard F., Sakamoto T., Sobkowiak K., Stachowski G., Trela P., 2015, *P&SS*, 118, 256.
2. High-resolution 8 mm and 1 cm Polarization of IRAS 4A from the VLA Nascent Disk and Multiplicity (VANDAM) Survey.
Cox, E. G., Harris, R. J., Looney, L. W., Segura-Cox, Dominique M., Tobin J. J., Li Z., **Tychoniec Ł.**, Chandler C. J., Dunham M. M., Kratter K., Melis C., Perez L. M., Sadavoy S. I., 2015, *ApJ*, 814, L28.
1. Far-infrared CO and H₂O emission in intermediate-mass protostars.
Matuszak, M., Karska, A., Kristensen, L. E., Herczeg G. J., **Tychoniec Ł.**, van Kempen T. A., Fuente, A., 2015, *A&A*, 578, 20.

Conference proceedings:

1. Chemical and kinematic complexity of the very young star-forming region Serpens Main observed with ALMA.
Tychoniec Ł., Hull C. L. H., Tobin J. J., van Dishoeck E. F., 2018, *Astrochemistry VII: Through the Cosmos from Galaxies to Planets*, Proceedings of the International Astronomical Union, IAU Symposium, Volume 332, pp. 249-253.