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Positions

Associate Department Head	Lunar and Planetary Laboratory	2024 –
Associate Professor	University of Arizona	2023 –
Assistant Professor	University of Arizona	2017 – 2023
Associate Staff Scientist	University of Arizona	2014 – 2017
Postdoctoral Research Associate	University of Arizona	2009 – 2014

Space missions

Monitoring Activity from Nearby sTars with uv Imaging and Spectroscopy (NASA/MANTIS)	Co-Investigator	2023 –
Colorado Ultraviolet Transit Experiment (NASA/CUTE)	Co-Investigator	2017 –
Atmospheric Remote-Sensing Infrared Exoplanet Large Survey (ESA/ARIEL)	Consortium Member	2015 –
Cassini-Huygens	Participating Scientist	2014 – 2017

Education

Ph.D Astrophysics: The stability of short-period extrasolar giant planets	University College London, UK	2005 – 2008
M.Sci Astrophysics	University College London, UK	1999 – 2003

Research Interests

My research focuses on models and observations of planetary upper and middle atmospheres. My work covers a wide range of different objects and techniques in the spirit of comparative planetology, spanning from the planets and satellites in the solar system to exoplanet systems. I have authored and co-authored more than 80 peer-reviewed journal articles (34 as a first or second author) and six book chapters.

Refereed Publications: First and second author

1. Stephenson, P., **Koskinen, T. T.**, et al., Seasonal variation of Saturn's Lyα brightness. Astrophys. J., 971, 89 (2024) (postdoc 1st author)
2. Brown, Z. L., **Koskinen, T. T.**, Moses, J. I., Guerlet, S., A pole-to-pole map of hydrocarbons in Saturn's upper stratosphere and mesosphere. Icarus, 417, 116133 (2024) (graduate student 1st author)
3. Huang, C., **Koskinen, T. T.**, Lavvas, P., Fossati, L., A hydrodynamic study of the escape of metal species and excited hydrogen from the atmosphere of the hot Jupiter WASP-121b. Astrophys. J., 951, 123 (2023) (postdoc 1st author)
4. Steinrueck, M. E., **Koskinen, T. T.**, et al., *Photochemical hazes dramatically alter temperature structure and atmospheric circulation in 3D simulations of hot Jupiters*. Astrophys. J., 951, 117 (2023)
5. **Koskinen, T. T.**, Lavvas, P., Huang, C., Bergsten, G., Fernandes, R. B., Young, M. E., Mass loss by atmospheric escape from extremely close-in planets. Astrophys. J., 929, 52 (2022)
6. Chadney, J., **Koskinen, T. T.**, Hu, X., Galand, M., Lavvas, P., Unruh, Y. C., Serigano, J., Hörst, S. M., Yelle, R. V., Energy deposition in Saturn's equatorial upper atmosphere. Icarus, 372, 114724 (2022)
7. Yelle, R. V., **Koskinen, T. T.**, Palmer, M. Y., Titan occultations of Orion's belt observed with Cassini/UVIS. Icarus, 368, 114587 (2021)
8. **Koskinen, T. T.**, Strobel, D. F., Brown, Z., An empirical model of the Saturn thermosphere. Icarus, 362, 114396 (2021)
9. Brown, Z. L., **Koskinen, T. T.**, Müller-Wodarg, I. C. F., West, R. A., Jouchoux, A., Esposito, L., A pole-to-pole pressure temperature map of Saturn's thermosphere from Cassini Grand Finale data. Nature Astronomy, 4, 872–879 (2020) (graduate student 1st author)
10. Vriesema, J. W., **Koskinen, T. T.**, Yelle, R. V., Electrodynamics in Saturn's thermosphere at low and middle latitudes. Icarus, 344, 113390 (2020) (graduate student 1st author)
11. **Koskinen, T. T.**, Sandel, B. R., Yelle, R. V., Holsclaw, G. M., Quemerais, E., Saturn in Lyman α: A comparison of Cassini and Voyager observations. Icarus, 339, 113594 (2020)
12. Lavvas, P., **Koskinen, T. T.**, Steinrück, M., Garcia Munoz, A., Showman, A., Photochemical hazes in sub-Neptunian atmospheres with focus on GJ1214b. Astrophys. J., 878, 118 (2019)
13. Müller-Wodarg, I. C. F., **Koskinen, T. T.**, Moore, L., Serigano, J., Yelle, R. V., Hörst, S., Waite, J. H., Mendillo, M., Atmospheric waves and their possible effect on the thermal structure of Saturn's thermosphere. GRL, 46, 2372–2380 (2019)
14. Fossati, L., **Koskinen, T. T.**, Lothringer, J. D., France, K., Young, M. E., Sreejith, A. G., Extreme ultraviolet radiation from A-stars: Implications for ultra-hot Jupiters. Astrophys. J., 868, L30 (2018)
15. **Koskinen, T. T.**, Guerlet, S., Atmospheric structure and helium abundance on Saturn from Cassini/UVIS and CIRS observations. Icarus, 307, 161–171 (2018)

16. Fossati, L., **Koskinen, T. T.**, France, K., Cubillos, P. E., Haswell, C. A., Lanza, A. F., Pillitteri, I., Suppressed Far-UV stellar activity and low planetary mass loss in the WASP-18 system. Astrophys. J., 155, 113 (2018)
17. Chadney, J. M., **Koskinen, T. T.**, Galand, M., Unruh, Y. C., Sanz-Forcada, J., Effect of stellar flares on the upper atmospheres of HD189733b and HD209458b. Astron. Astrophys., 608, A75 (2017) (graduate student mentee 1st author)
18. Lavvas, P., **Koskinen, T. T.**, Aerosol properties in the atmospheres of extrasolar giant planets. Astrophys. J., 847, 32 (2017)
19. Parke Loyd, R. O**., Koskinen, T. T.**, France, K., Schneider, C., Redfield, S., Ultraviolet C II and Si III transit spectroscopy and modeling of the evaporating atmosphere of GJ436b. Astrophys. J., 834, L17 (2017) (graduate student mentee 1st author)
20. **Koskinen, T. T.**, Moses, J. I., West, R. A., Guerlet, S., Jouchoux, A., The detection of benzene in Saturn's upper atmosphere. Geophys. Res. Lett., 43, 7895–7901 (2016)
21. **Koskinen, T. T.**, Erwin, J. T., Yelle, R. V., On the escape of CH4 from Pluto. Geophys. Res. Lett., 42, 7200–7205 (2015)
22. **Koskinen, T. T.**, Sandel, B. R., Yelle, R. V., Strobel, D. F., Müller-Wodarg, I. C. F., Erwin, J., Saturn's variable thermosphere from Cassini/UVIS occultations. Icarus, 260, 174–189 (2015)
23. **Koskinen, T. T.**, Yelle, R. V., Lavvas, P., Cho, J-Y. K., Electrodynamics on extrasolar giant planets. Astrophys. J., 796, 16 (2014)
24. Lavvas, P., **Koskinen, T. T.**, Yelle, R. V., Electron densities and alkali atoms in exoplanet atmospheres. Astrophys. J., 796, 15 (2014)
25. **Koskinen, T. T.**, Lavvas, P., Harris, M. J., Yelle, R. V., Thermal escape from extrasolar giant planets. Phil. Trans. R. Soc. A, 372, 20130089 (2014)
26. **Koskinen, T. T.**, Sandel, B. R., Yelle, R. V., Capalbo, F. J., Holsclaw, G. E., McClintock, W. E., Edgington, S., The density and temperature structure near the exobase of Saturn from Cassini/UVIS solar occultations. Icarus, 226, 1318–1330 (2013)
27. **Koskinen, T. T.**, Harris, M. J., Yelle, R. V., Lavvas, P., The escape of heavy atoms from the ionosphere of HD209458b. I. A photochemical-dynamical model of the thermosphere. Icarus, 226, 1678–1694 (2013)
28. **Koskinen, T. T.**, Yelle, R. V., Harris, M. J., Lavvas, P., The escape of heavy atoms from the ionosphere of HD209458b. II. Interpretation of the observations. Icarus, 226, 1695–1708 (2013)
29. **Koskinen, T. T.**, Yelle, R. V., Snowden, D. S., Lavvas, P., Sandel, B. R., Capalbo, F. J., Benilan, Y., West, R. A., The mesosphere and thermosphere of Titan revealed by Cassini/UVIS stellar occultations. Icarus, 216, 507–534 (2011)
30. **Koskinen, T. T.**, Cho, J. Y-K., Achilleos, N., Aylward, A. D., Ionization of Extrasolar Giant Planet Atmospheres. Astrophys. J., 722, 178–187 (2010)
31. **Koskinen, T. T.**, Yelle, R. V., Lavvas, P., Lewis, N. K., Characterizing the thermosphere of HD209458b with UV transit observations. Astrophys. J., 723, 116–128 (2010)
32. **Koskinen, T. T.**, Aylward, A.D., Miller, S., The Upper Atmosphere of HD17156b. Astrophys. J., 693, 868–885 (2009)
33. **Koskinen, T. T.**, Aylward, A.D., Miller, S., A Stability Limit for the Atmospheres of Giant Extrasolar Planets. Nature, 450, 845–848 (2007)

34. **Koskinen, T. T.**, Aylward, A.D., Smith, C.G.A., Miller, S., A Thermospheric Circulation Model for Extrasolar Giant Planets. Astrophys. J., 661, 515–526 (2007)

Refereed Publications: Co-Author

1. Fernandes, R., et al. (including **Koskinen, T. T.**), Signatures of atmospheric mass loss and planet migration in the time evolution of short-period transiting exoplanets. Astron. J., 169, 208 (2025)
2. Egan, A., et al. (including **Koskinen, T. T.**), Colorado Ultraviolet Transit Experiment near-ultraviolet transmission spectroscopy of the ultrahot Jupiter KELT-9b. Astron. J., 168, 108 (2024)
3. Cubillos, P. E., Fossati, L., **Koskinen, T. T.**, et al., The Hubble/STIS near-ultraviolet transmission spectrum of HD189733b. Astron. Astrophys., 671, A170 (2023)
4. Fossati, L., et al. (including **Koskinen, T. T.**), The GAPS programme at TNG. XLV. HI Balmer lines transmission spectroscopy and NLTE atmospheric modelling of the ultra-hot Jupiter KELT-20b/MASCARA-2b. Astron. Astrophys., 676, A99 (2023)
5. France, K., Fleming, B., Egan, A., Desert, J-M., Fossati, L., **Koskinen, T. T.**, et al., The Colorado Ultraviolet Transit Experiment mission overview. Astron. J., 165, 63 (2023)
6. Moses, J. I., Brown, Z. L, **Koskinen, T. T.**, et al., Saturn's atmospheric response to the large influx of ring material inferred from Cassini INMS measurements. Icarus, 391, 115328 (2023)
7. Sreejith, A. G., France, K., Fossati, L., **Koskinen, T. T.**, et al., CUTE reveals escaping metals in the upper atmosphere of the ultrahot Jupiter WASP-189b. Astrophys. J. Lett., 954, L23 (2023)
8. Bergsten, G. J., Pascucci, I., Mulders, G. D., Fernandes, R. B., **Koskinen, T. T.**, The demograph- ics of Kepler's Earths and super-Earths into the habitable zone. Astron. J., 164, 190 (2022) (graduate student collaborator 1st author)
9. Brown, Z. L., Medvedev, A. S., Starichenko, E. D., **Koskinen, T. T.**, Mu ller-Wodarg, I. C. F., Evidence for gravity waves in the thermosphere of Saturn and implications for global circulation. Geophys. Res. Lett., 49, e2021GL097219 (2022) (graduate student 1st author)
10. Fernandes, R. B., Mulders, G. D., Pascucci, I., Bergsten, G. J., **Koskinen, T. T.**, et al., ptero- dactyls: A tool to uniformly search and vet for young transiting planets in TESS primary mission photometry. Astron. J., 164, 78 (2022) (graduate student mentee 1st author)
11. Morgan, A., Wilson, C. P., France, K., Youngblood, A., **Koskinen, T. T.**, Detection feasibility of H2 in Ultra-hot Jupiter atmospheres. Res. Notes AAS, 6, 141 (2022)
12. Serigano, J., Hörst, S. M., He, C., Gautier, T., Yelle, R. V., **Koskinen, T. T.**, Trainer, M. G., Radke, M. J., Compositional measurements of Saturn's upper atmosphere and rings from Cassini INMS: An extended analysis of measurements from Cassini's Grand Finale orbits. J. Geophys. Res. Planets, 127, e2022JE007238 (2022)
13. Rodriguez, S., et al. (including **Koskinen, T. T.**), Science goals and new mission concepts for future exploration of Titan's atmosphere, geology, and habitability: titan POlar scout/orbitEr and in situ lake lander and DrONe explorer (POSEIDON). Exp. Astron. (2022)

14. France, K., et al. (including **Koskinen, T. T.**), The Extreme-ultraviolet Stellar Characterization for Atmospheric Physics and Evolution (ESCAPE) mission: Motivation and overview. JATIS, 8, 014006 (2022)
15. Borsa, F., Fossati, L., **Koskinen, T. T.**, Young, M. E., Shulyak, D., High-resolution detection of neutral oxygen in the atmosphere of an ultra-hot exoplanet. Nature Astronomy, 6, 226–231 (2022)
16. Fossati, L., Young, M. E., Shulyak, D., **Koskinen, T.**, Huang, C., Cubillos, P. E., France, K., Sreejith, A. G., Non-local thermodynamic equilibrium effects determine the upper atmospheric structure of the ultra-hot Jupiter KELT-9b. Astron. Astrophys., 653, A52 (2021)
17. Steinrueck, M., Showman, A., Lavvas, P., **Koskinen, T. T.**, Tan, X., Zhang, X., 3D simulations of photochemical hazes in the atmosphere of hot Jupiter HD189733b. MNRAS, 504, 2783–2799 (2021) (graduate student 1st author)
18. Tribbett, P. D., Robinson, T. D., **Koskinen, T. T.**, Titan in transit: Ultraviolet occultation observations reveal a complex atmospheric structure. Plan. Sci. J., 2, 109 (2021)
19. Fossati, L., Shuluak, D., Sreejith, A. G., **Koskinen, T.**, et al., A data-driven approach to con- straining the atmospheric temperature structure of the ultra-hot Jupiter KELT-9b. Astron. Astrophys., 643, A131 (2020)
20. France, K., Duvvuri, G., Egan, H., **Koskinen, T. T.**, et al., The high-energy radiation environ- ment around a 10 Gyr M dwarf: Habitable at last? Astron. J., 160, 237 (2020)
21. Young, M. E., Fossati, L., **Koskinen, T. T.**, Salz, M., Cubillos, P. E., France, K., Non-local thermodynamic equilibrium transmission spectrum modeling of HD209458b. Astron. Astrophys., 641, A47 (2020)
22. Serigano, J., Hörst, S. M., He, C., Gautier, T., Yelle, R. V., **Koskinen, T. T.**, Trainer, M. G., Compositional measurements of Saturn's upper atmosphere and rings from Cassini INMS. JGR Planets, 125, e2020JE006427 (2020)
23. Cubillos, P. E., Fossati, L., **Koskinen, T. T.**, Young, M. E., Salz, M., France, K., Sreejith, A. G., Haswell, C. A., Near-ultraviolet transmission spectroscopy of HD209458b: Evidence of ionized iron beyond the planetary Roche lobe. Astron. J., 159, 111 (2020)
24. Turner, J. D., de Mooij, E. J. W., Jayawardhana, R., Young, M. E., Fossati, L., **Koskinen, T. T.**, Lothringer, J. D., Karjalainen, R., Karjalainen, M., Detection of ionized calcium in the atmosphere of the ultra-hot Jupiter KELT-9b. Astrophys. J., 888, L13 (2020)
25. Pryor, W. R., Esposito, L. W., Jouchoux, A., West, R. A., Grodent, D., Gerard, J.-C., Radioti, A., Lamy, L., **Koskinen, T. T.**, Cassini UVIS detection of Saturn's north polar hexagon in the Grand Finale orbits. J. Geophys. Res. Planets, 124, 1979–1988 (2019)
26. Sreejith, A. G., Fossati, L., Fleming, B. T., France, K., **Koskinen, T. T.**, Egan, A., Ru disser, A., Steller, M., Colorado Ultraviolet Transit Experiment data simulator. J. Astron. Telesc. Instrun. Syst., 5, 018004 (2019)
27. Pearson, K. A., Griffith, C. A., Zellem, R. T., **Koskinen, T. T.**, Roudier, G. M., Ground-based spectroscopy of the exoplanet XO-2b using a systematic wavelength calibration. AJ, 157, 21 (2019) (graduate student mentee 1st author)
28. Yelle, R. V., Serigano, J., **Koskinen, T. T.**, H örst, S., Perry, M. E., Cravens, T. E., Perryman, R. S., Hunter Waite, J. Jr., Thermal structure and composition of Saturn's upper atmosphere from Cassini/INMS measurements. Geophys. Res. Lett., 45 (2018)

29. Lothringer, J., Barman, T., **Koskinen, T. T.**, Extremely irradiated Hot Jupiters: Non-oxide inversions, H− opacity, and thermal dissociation of molecules. Astrophys. J., 866, 27 (2018) (graduate student mentee 1st author)
30. Gröller, H., Montmessin, F., Yelle, R., Lefevre, F., Forget, F., Schneider, N., **Koskinen, T. T.**, Deighan, J., Jain, S. K., MAVEN/IUVS stellar occultation measurements of Mars atmospheric structure and composition. J. Geophys. Res.: Planets, 123 (2018)
31. Cui, J., Zhao, L.-L., Yelle, R. V., Zhao, L.-L., Stone, S., Jiang, F.-Y., Cao, Y.-T., Yao, M.-J., **Koskinen, T. T.**, Wei, Y., The impact of crustal magnetic fields on the thermal structure of the Martian upper atmosphere. Astrohys. J., 853, L33 (2018)
32. Fleming, B., France, K., Nell, N., Kohnert, R., Pool, K., Egan, A., Fossati, L., **Koskinen, T. T.**, Vidotto, A., Hoadley, K., Desert, J.-M., Beasley, M., Petit, P., The Colorado Ultraviolet Transit Experiment (CUTE): A dedicated cubesat mission to study exoplanetary mass loss and magnetic fields. J. Astron. Telesc. Instrun. Syst., 4, 014004 (2018)
33. Fossati, L., Marcelja, S. E., Staab, D., Cubillos, P., France, K., Haswell, C. A., Ingrassia, S., Jenkins, J. S., **Koskinen, T. T.**, Lanza, A. F., Redfield, S., Youngblood, A., Pelzmann, G., On the effects of ISM absorption on stellar activity measurements and its relevance for exoplanet studies. Astron. Astrophys., 601, A104 (2017)
34. Cui, J., Cao, Y.-T., Lavvas, P., **Koskinen, T. T.**, The variability of HCN in Titan's upper atmosphere as implied by the Cassini Ion-Neutral Mass Spectrometer measurements. Astrophys. J., 826, L5 (2016)
35. Chadney, J. M., Galand, M., **Koskinen, T. T.**, Miller, S., Sanz-Forcada, J., Unruh, Y. C., Yelle, R. V., EUV-driven Ionospheres and electron transport on extrasolar giant planets orbiting active stars. Astron. Astrophys., 587, A87 (2016) (graduate student mentee 1st author)
36. Capalbo, F. J., B énilan, Y., Fray, N., Schwell, M., Champion, N., Es-sebbar, Et., **Koskinen, T. T.**, Lehocki, I., Yelle, R. V., New benzene absorption cross sections in the VUV, relevance for Titan's upper atmosphere. Icarus, 265, 95–109 (2016) (graduate student mentee 1st author)
37. Gro ller, H., Yelle, R. V., **Koskinen, T. T.**, et al., Probing the Martian atmosphere with MAVEN/IUVS stellar occultations. Geophys. Res. Lett., 42, 9064–9070 (2015)
38. Tinetti, G., et al. (including **Koskinen, T. T.**), The EChO science case. Exp. Astron., 40, 329–391 (2015)
39. Fossati, L., France, K., **Koskinen, T. T.**, Juvan, I. G., Haswell, C. A., Lendl, M., Far-UV spectroscopy of the planet-hosting star WASP-13: high energy irradiance, distance, age, planetary mass loss rate, and circumstellar environment. Astrohys. J., 815, 118 (2015)
40. Capalbo, F. J., B énilan, Y., Yelle, R. V., **Koskinen, T. T.**, Titan's upper atmosphere from Cassini/UVIS solar occultations. Astrophys. J., 814, 86 (2015) (graduate student mentee 1st author)
41. Sandel, B. R., Gr öller, H., Yelle, R. V., **Koskinen, T. T.**, et al., Altitude profiles of O2 on Mars from SPICAM stellar occultations. Icarus, 252, 154–160 (2015)
42. Chadney, J., Galand, M., Unruh, Y., **Koskinen, T. T.**, Sanz-Forcada, J., XUV-driven mass loss from extrasolar giant planets orbiting active stars. Icarus, 250, 357–367 (2015) (graduate student mentee 1st author)

43. Menager, H., Barthelemy, M., **Koskinen, T. T.**, Lilensten, J., Ehrenreich, D., Parkinson, C., Calculation of the H Lyman α emission of the hot Jupiters HD209458b and HD189733b. Icarus, 226, 1709–1718 (2013) (graduate student mentee 1st author)
44. Capalbo, F. J., Benilan, Y., Yelle, R. V., **Koskinen, T. T.**, Sandel, B. R., Holsclaw, G. M., McClintock, W. E., Solar occultation by Titan measured by Cassini/UVIS. Astrophys. J., 766, L16, 5pp. (2013) (graduate student mentee 1st author)
45. Lavvas, P., Yelle, R. V., **Koskinen, T. T.**, et al., Aerosol growth in Titan's ionosphere. PNAS, 110, 2729–2734 (2013)
46. Cui, J., Yelle, R. V., Strobel, D. F., Müller-Wodarg, I. C. F., Snowden, D. S., **Koskinen, T. T.**, Galand, M., The CH4 structure in Titan's upper atmosphere revisited. J. Geophys. Res., 117, E11006 (2012)
47. Tinetti, G., et al. (including **Koskinen, T. T.**), EChO: Exoplanet Characterization Observatory. Exp. Astron., 34, 311–353 (2012)

Book Chapters

1. **Koskinen, T. T.,** Brown, Z., Müller-Wodard, I. C. F., Strobel, D. F., *Saturn's Thermosphere: A post-Cassini perspective*, in *Cassini at Saturn: The Grand Finale* (eds. K. Baines, M. Flasar, N. Krupp, T. Stallard), Cambridge University Press, accepted for publication
2. Fletcher, L. N., Sromovsky, L., Hue, V., Moses, J. I., Guerlet, S., West, R. A., **Koskinen, T. T.**, *Saturn's seasonal atmosphere at northern summer solstice,* in *Cassini at Saturn: The Grand Finale* (eds. K. Baines, M. Flasar, N. Krupp, T. Stallard), Cambridge University Press, accepted for publication
3. Müller-Wodarg, I. C. F., Koskinen, T. T., *Titan's upper neutral atmosphere and ionosphere,* Chapter 6 in *Titan After Cassini-Huygens* (eds. R. Lopez, C. Elachi, I.C.F. Müller-Wodarg, A. Solomonidou), Elsevier (2025)
4. Cho, J. Y-K., Thrastarson, H., **Koskinen, T. T.**, Read, P. L., Tobias, S. M., Moon, W., Skinner, J. W., *Exoplanets and the sun*, in *Zonal Jets: Phenomenology, Genesis, and Physics* (eds. B. Galperin, P. L. Read), Cambridge University Press (2019)
5. Strobel, D. F., **Koskinen, T. T.**, Müller-Wodarg, I. C. F., *Saturn's variable thermosphere*, in *Saturn in the 21st century* (eds. K. H. Baines, F. M. Flasar, N. Krupp, T. Stallard), Cambridge University Press (2019)
6. Garcia Munoz, A., **Koskinen, T. T.**, Lavvas, P., *Upper atmospheres and ionospheres of planets and satellites*, in *Handbook of Exoplanets* (eds. H. J. Deeg, J. A. Belmonte), Springer International Publishing AG (2017, 2024), living review last updated in 2024

Invited talks, plenary presentations and seminars

1. **Koskinen, T. T.,** Shaken and stirred, with aurora: Saturn's enigmatic upper atmosphere revealed by Cassini, seminar, Imperial College London, June 2024
2. **Koskinen, T. T.**, Brown, Z., Müller-Wodarg, I. C. F., Strobel, D. F., Saturn's thermosphere: A post-Cassini perspective, Saturn Science Conference 2020 (canceled due to the Covid-19 pandemic)

3. **Koskinen, T. T.**, Yelle, R. V., Serigano, J., H örst, S., Waite, J. H. and the SAMWG team, Densities in Saturn's thermosphere: A multi-instrument perspective, Cassini Project Science Group (PSG) meeting plenary talk, Rome, Italy, 2018
4. **Koskinen, T. T.**, Cool giants and hot exoplanets: Adventures in upper atmospheres, seminar, Jet Propulsion Laboratory, Pasadena, CA, 2017
5. **Koskinen, T. T.**, Thermal escape from hot extrasolar planets, Department of Physics and Astronomy seminar, George Mason University, Fairfax County, 2017
6. **Koskinen, T. T.**, Guerlet, S., UVIS/CIRS constraints on Saturn's He abundance, Cassini PSG 71 plenary talk, Monrovia, CA, 2017
7. **Koskinen, T. T.**, Moses, J. I., West, R. A., Guerlet, S., Jouchoux, A., The detection of benzene in Saturn's upper atmosphere, Cassini PSG 69 plenary talk, ESTEC, Noordwijk, Netherlands, 2016
8. **Koskinen, T. T.**, Strobel, D. F., The expansion and contraction of Saturn's thermosphere, Cassini PSG 65 plenary talk, Italian Space Agency, Rome, Italy, 2015
9. **Koskinen, T. T.**, Sandel, B. R., Yelle, R. V., Strobel, D. F., Mu ller-Wodarg, I. C. F., Erwin, J, Saturn's upper atmosphere from Cassini/UVIS occultations, Cassini PSG 63 plenary talk, ESTEC, Noordwijk, Netherlands, 2014
10. **Koskinen, T. T.**, Lavvas, P., Yelle, R. V., Cho, J. Y-K., Kataria, T., Electrodynamics in giant exoplanet atmospheres, American Geophysical Union (AGU) Fall Meeting, San Francisco, CA, 2014
11. **Koskinen, T. T.**, Strobel, D. F., Mu ller-Wodarg, I. C. F., Saturn's variable thermosphere. Part 1: The view from UV occultations, Saturn Science Conference: Saturn in the 21st century, Madison, WI, 2014
12. **Koskinen, T. T.**, Sunsets on Saturn: A new perspective on the upper atmosphere from Cassini UVIS occultations, Center for Space Physics seminar, Boston University, Boston, MA, 2014
13. **Koskinen, T. T.**, Giants playing with fire: the story of thermal atmospheric escape, International Space Science Institute (ISSI) meeting, Bern, Switzerland, 2013
14. **Koskinen, T. T.**, Thermal escape from extrasolar giant planets, Royal Society Discussion Meeting, London, UK, 2013
15. **Koskinen, T. T.**, Characterizing planetary upper atmospheres with UV observations (and models), Groupe de Spectrometrie Moleculaire et Atmospherique seminar, Universite Reims Champagne- Ardenne, Reims, France, 2012
16. **Koskinen, T. T.**, Yelle, R. V., Harris, M. J., Lavvas, P., The escape of exoplanetary atmospheres under strong irradiation, AGU Fall Meeting, San Francisco, CA, 2012
17. **Koskinen, T. T.**, Characterizing the upper atmospheres of extrasolar planets, Institute de Planetologie et d'Astrophysique de Grenoble seminar, Universit é de Grenoble, Grenoble, France, 2012
18. **Koskinen, T. T.**, Yelle, R. V., Harris, M. J., Lavvas, P., Interpreting the observations of the upper atmospheres of extrasolar planets, Modeling Atmospheric Escape, Charlottesville, VA, 2012
19. **Koskinen, T. T.**, Yelle, R. V., Snowden, D. S., Lavvas, P., Sandel, B. R., Capalbo, F. J., Benilan, Y., West, R. A., Titan's upper atmosphere revealed by Cassini/UVIS stellar occultations, EPSC, Nantes, France, 2011

20. **Koskinen, T. T.**, Thermospheres of extrasolar giant planets, Department of Physics and Astronomy seminar, University College London, London, UK, 2010
21. **Koskinen, T. T.**, Aylward, A., Simulations of exoplanet thermospheres in 3D, Royal Astronom- ical Society National Astronomy Meeting, Belfast, UK, 2008
22. **Koskinen, T. T.**, Exoplanetary atmospheres and their dynamics, Cumberland Lodge Meeting, Windsor Great Park, UK, 2008

Conference and workshop presentations (oral first author only)

1. Koskinen, T. T., *Atmospheric escape from ultra-hot Jupiters need not always be significant,* Escape from Exoplanets, June 2024, London, UK
2. Koskinen, T. T., Huang, C., Sreejith, A. G., France, K., Fossati, L., Lavvas, P., *Atmospheric escape and near-UV signatures of ultra-hot Jupiters,* 55th Annual Meeting of the Division of Planetary Sciences (DPS), 200.06, October 2023, San Antonio, TX
3. Koskinen, T. T., Huang, C., Lavvas, P., Fossati, L., Sreejith, A. G., France, K., *Modeling the near-UV signatures of escaping ultra-hot Jupiter atmospheres*, 242nd Meeting of the American Astronomical Society, 327.01, June 2023, Albuquerque, NM
4. Koskinen, T. T., et al., The rapidly escaping atmosphere of WASP-121b, 54th Annual Meeting of the DPS, October 2022, London, ON, Canada
5. Koskinen, T. T., Mass loss from extremely close-in planets, ARIEL Upper Atmospheres Working Group seminar, 2022, via Zoom
6. Koskinen, T. T., Brown, Z., West, R., Jouchoux, A., Esposito, L., Saturn's upper atmosphere from the Cassini/UVIS Grand Finale stellar occultations, EPSC 2018, Berlin, Germany
7. Koskinen, T. T., Yelle, R. V., Holsclaw, G. M., Sandel, B. R., Saturn in Lyman α: A comparison of Cassini and Voyager observations, Cassini Science Symposium, Boulder, CO, 2018
8. Koskinen, T. T., Guerlet, S., Constraints on atmospheric structure and helium abundance of Saturn from Cassini/UVIS and CIRS observations, DPS Meeting 49, Provo, UT, 2017
9. Koskinen, T. T., Moses, J. I., West, R., Guerlet, S., Jouchoux, A., New observational constraints on hydrocarbon chemistry in Saturn's upper atmosphere, EPSC-DPS Joint Meeting, Pasadena, CA, 2016
10. Koskinen, T. T., Strobel, D. F., West, R. A., Yelle, R. V., Variability in Saturn's upper atmosphere from Cassini/UVIS occultations, EPSC, Nantes, France, 2015
11. Koskinen, T. T., Sandel, B. R., Yelle, R. V., Strobel, D. F., Mu ller-Wodarg, I. C. F., Erwin, J., Saturn's variable thermosphere from Cassini/UVIS occultations, DPS Meeting 46, Tucson, AZ, 2014
12. Koskinen, T. T., Sandel, B. R., Yelle, R. V., Capalbo, F. J., Holsclaw, G. M., McClintock, B. E., Edgington, S., The thermosphere of Saturn from Cassini UVIS occultations, DPS Meeting 45, Denver, CO, 2013
13. Koskinen, T. T., Yelle, R. V., Harris, M., Lavvas, P., Characterizing the atmospheres of extrasolar planets with UV transit observations, UV Astronomy: HST and Beyond, Kaua'i, Hawai'i, 2012

14. Koskinen, T. T., Yelle, R. V., Snowden, D. S., Lavvas, P., Sandel, B. R., Capalbo, F. J., Benilan, Y., West, R. A., Recent results from analysis of UVIS stellar occultations, Titan Science Meeting, Abbaye Saint Jacut-de-la-Mer, France
15. Koskinen, T. T., Yelle, R. V., Snowden, D. S., Lavvas, P., Sandel, B. R., Capalbo, F. J., Benilan, Y., West, R. A.: New perspectives on the upper atmosphere of Titan from Cassini UVIS stellar occultations, DPS Meeting 42, Pasadena, CA, 2010
16. Koskinen, T. T., Thermospheres of extrasolar giant planets, EPSC, Rome, Italy, 2010
17. Koskinen, T. T., A 3D Model for the Upper Atmospheres and Ionospheres of Extrasolar Giant Planets, Molecules 2008, Paris, France
18. Koskinen, T. T., Aylward, A., Miller, S., 3D Simulations of the Upper Atmosphere and Ionosphere of HD17156b, EPSC, Potsdam, Germany, 2008
19. Koskinen, T. T., Aylward, A., Miller, S., Thermospheres of Extrasolar Giant Planets, EPSC, Berlin, Germany, 2007

Outreach and public talks

1. The rise of the Titans, Quail Creek Resort Community, Green Valley, AZ, 2025
2. The search for habitable planets, Quail Creek Resort Community, Green Valley, AZ, 2022
3. What are Hot Jupiters?, Flandrau Planetarium, Tucson, AZ, 2018
4. The new Copernican revolution: Discovery and characterization of extrasolar planets, Quail Creek Resort Community, Green Valley, AZ, 2015
5. The myth and science of the northern lights: From the land of Santa Claus to distant exoplanets, Finnfest USA, Minneapolis, MN, 2014
6. The myth and science of the northern lights: From the land of Santa Claus to distant exoplanets, Finnfest USA, Tucson, AZ, 2012
7. Extrasolar Giant Planets and the Stability of Their Atmospheres, University College London Astronomy Diploma Club, London, UK, 2007

Prizes and awards

2024 Best Reviewer of the Year, Icarus
2018 NASA Group Achievement Award to the Cassini Ultraviolet Imaging Spectrograph (UVIS) Science Team
2008 Jon Darius Memorial Prize for Outstanding Postgraduate Research in Astronomy, University College London, UK
2005 – 2008 Perren and Departmental Studentship awards, University College London, UK

Grants, subcontracts, and other funding

1. NASA Cassini Data Analysis Program (CDAP): Seasonally variable hydrocarbon photochemistry on Saturn as constrained by Cassini UVIS occultation data, 2025-2028 (Co-Investigator)
2. NASA Exoplanets Research Program (XRP): Extreme space weather effects on terrestrial exoplanet atmospheres in the JWST era, 2025-2028 (Co-Investigator)

3. France-Arizona Institute for Global Grand Challenges – Searching for Habitable Worlds in the Solar System and Beyond: Atmospheric structure and haze formation on Titan, 2023-2026 (Co-Principal Investigator)
4. Space Telescope Science Institute (STScI) Hubble Space Telescope (HST) Guest Observer (GO) program: Transiting ultra-hot gas giants – Astrophysical laboratories for atmospheric escape studies, 2023–2026 (Co-Investigator)
5. NASA Exoplanet Research Program (XRP): A comprehensive model of atmospheric escape for transiting planets on the edge of the Hot Neptune desert, 2023–2025 (Principal Investigator)
6. NASA Cassini Data Analysis Program (CDAP): The changing seasons of Saturn's upper atmosphere viewed in the ultraviolet, 2022–2025 (Principal Investigator)
7. NASA Cassini Data Analysis Program (CDAP): Saturn's upper atmosphere revealed by new Cassini/UVIS occultations, 2019–2025 (Principal Investigator)
8. NASA Cassini Data Analysis Program (CDAP): A comprehensive investigation of Titan's middle and upper atmosphere, 2019–2025 (Principal Investigator)
9. NASA Astrophysics Research and Analysis (APRA) subcontract: The CUTE science mission and operations: A cubesat studying the most extreme exoplanets, 2021–2023 (Co-Investigator)
10. NASA New Frontiers Data Analysis Program (NFDAP): Atmospheric structure and escape on Pluto, 2018-2023 (Principal Investigator)
11. NASA Exoplanet Research Program (XRP): The middle atmospheres of exoplanets, 2018-2024 (Co-Investigator)
12. Space Telescope Science Institute (STScI) Hubble Space Telescope (HST) Guest Observer (GO) program: NUV spectroscopy of HD189733b – Measuring the mass-loss and ionization state of a prototypical escaping atmosphere, 2018–2022 (Co-Investigator)
13. NASA Astrophysics Research and Analysis (APRA) subcontract: Colorado Ultraviolet Transit Experiment: Mass loss and magnetic fields in exoplanetary systems, 2017–2021 (Co-Investigator)
14. Space Telescope Science Institute (STScI) Hubble Space Telescope (HST) Guest Observer (GO) program: Cloudy solutions to the anomalous emission of HD80606b, 2020–2021 (Co-Investigator)
15. Jet Propulsion Laboratory (JPL) subcontract: Saturn working group discipline legacy products: Density structure in Saturn's upper atmosphere, 2017–2018 (Co-Principal Investigator)
16. Jet Propulsion Laboratory (JPL) subcontract: Saturn's upper atmosphere for the Grand Finale, 2017–2018 (Co-Principal Investigator)
17. STScI HST GO program: Unveiling the circumstellar environment of the most extreme hot Jupiters, 2015–2018 (Co-Investigator and Admin-PI)
18. NASA CDAP: Characterizing the density and temperature structure in the upper atmospheres of Saturn and Titan, 2014–2017 (Principal Investigator)
19. NASA CDAP: Characterizing the density and temperature profiles in the upper atmosphere of Saturn, 2013–2014 (Principal Investigator)

20. JPL subcontract: Analysis of stellar occultations by Saturn observed by the Cassini/UVIS in- strument in preparation for the end of the Cassini Solstice (XXM) mission, 2012–2013 (Co-Principal Investigator)

Graduate student advising and mentoring

I am the current faculty advisor to two graduate students and mentor other graduate students at LPL. In the past, I have advised, mentored, and co-authored papers with 11 other graduate students. In summary, I have authored or co-authored more than 30 refereed publications that involve graduate students in a prominent role.

Graduate student advisees and co-advisees

1. Anna R. Taylor, LPL, 2023-present
2. Devin Hoover, LPL, 2023-present
3. Zarah L. Brown, LPL, graduated 2023 (Gerard Kuiper Memorial Award)
4. Maria Steinrück, LPL, graduated 2021 (now a 51 Pegasi b fellow)
5. Jess Vriesema, LPL, graduates 2020 (Co-Advised with Prof. Roger Yelle)

Graduate student mentees and co-authors

1. Rahul Arora, LPL, 2024–present (Advisor: Sukrit Ranjan)
2. Fuda Nguyen, LPL, 2024–present (Advisor: Daniel Apai)
3. Galen Bergsten, LPL, 2021–present (Advisor: Ilaria Pascucci)
4. Jada Walters, LPL, graduated 2024 (Advisor: Kristofer Klein)
5. Rachel Fernandes, LPL, graduated 2023 (Advisor: Ilaria Pascucci)
6. Kyle Pearson, LPL, graduated 2020 (Advisor: Caitlin Griffiths)
7. Joshua Lothringer, LPL, graduated 2019 (Advisor: Travis Barman)
8. Robert Parke Loyd, University of Colorado Boulder, graduated 2017 (Advisor: Kevin France)
9. Joshua Chadney, Imperial College London, graduated 2015 (Advisor: Marina Galand)
10. Helene Menager, IPAG Grenoble, France (Advisor: Mathew Barthelemy)
11. Fernando Capalbo, Universite Paris-Est Creteil et Universite Paris Diderot (Advisor: Yves Benilan)

Postdoctoral scholars

1. Peter Stephenson, 2022 – present
2. Chenliang Huang, 2019-2022 (now an Associate Research Professor at Shanghai Astronomical Observatory, Shanghai, China)

Courses taught

Fall 2024	PTYS544 High Atmospheres	Graduate class
Fall 2023	PTYS212 Science and Politics of Climate Change	63 undergrads
Spring 2023	PTYS544 High Atmospheres	Graduate class
Fall 2022	PTYS212 Science and Politics of Climate Change	39 undergrads

Spring 2022	PTYS170B2 Universe and Humanity	68 undergrads
Fall 2021	PTYS170B2 Universe and Humanity	103 undergrads
Fall 2020	PTYS170B2 Universe and Humanity	72 undergrads
Fall 2019	PTYS170B2 Universe and Humanity	120 undergrads
Spring 2019	PTYS544 High Atmospheres	Graduate class
Fall 2018	PTYS170B2 Universe and Humanity	96 undergrads

Service

Professional	Steering committee member, NASA Outer Planet Assessment Group (OPAG), 2024-
Department	Associate Department Head, 2024-
Department	Chair, Graduate Admissions and Advising Committee, 2023-2024
Department	Chair, Library Committee (led library renovation), 2021-2024
Department	Graduate Student Colloquium Committee, 2019-2020,2023-2024
Professional	Chair, LPL/Steward Ice Giant Exploration Group, 2023-present
Professional	NASA Telescope Allocation Committee, 2021-2022
Department	Wrote successful proposals for courses PTYS212 Science and Politics of Climate Change and PTYS170B2 Universe and Humanity to be included in the university's new general education program
Department	Graduate Admissions and Advising Committee, 2018-2023
Department	Department Life Committee, 2018-2019
Department	Faculty representative to the Journal Club, 2017-2018
Professional	Session organizer, Planetary Aeronomy: Near and Afar, EPSC-DPS, Geneva, Switzerland, 2019, EPSC, Berlin, Germany 2018 (chair)
Professional	Chair, NASA review panel, 2019
Professional	NASA review panel, 2018
Professional	Cassini Saturn Atmosphere Modeling Group, 2014-2018
Professional	Reviewer for Nature, Science, Icarus, Astrophysical Journal, Astronomy and Astrophysics, Canadian Journal of Physics, Planetary and Space Science, Research in Astronomy and Astrophysics

References

Available on request