

PERSONAL DETAILS

Name: Juraj Tóth
Date of Birth: 1975
Nationality: Slovak
Office address: Comenius University in Bratislava,
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POSITION Professor

RESEARCH INTEREST

- Studying physical and dynamical aspects of small solar system bodies.
- Understanding evolution of asteroids and comets into Near Earth Objects and the dynamical ways of meteorites deliveries to the Earth.
- Characterizing of meteor showers activities and their relation to their parent bodies.
- Inventing of wide field optical imaging and detecting systems in astronomy.

EDUCATION

2022: professor position
2017: doc. -associate professor
2007: RNDr. –Physical processes influenced the meteoroid particles in the interplanetary space
2005: PhD in astrophysics, thesis: Leonid meteor shower -spatial structure and fragmentation of meteoroids in space (supervisor prof. V. Porubčan)
1993-1998: Master of Science in Physics -Astronomy and Astrophysics, Diploma thesis: Leonid meteor shower, Comenius University in Bratislava

PROFESSIONAL EXPERIENCE

2019-2023: Vice-dean of Faculty of Mathematics, Physics and Informatics, Comenius University in Bratislava
2003-present: Research scientist, Department of Astronomy, Physics of the Earth and Meteorology, Faculty of Mathematics, Physics and Informatics Comenius University, Bratislava
1998 to 2003: Observational astronomer -astrometry and photometry of asteroids and comets, Astronomical Observatory at Modra (AGO, code 118)
Summer of 1997: Vatican Observatory Astronomical Summer School (Planetary Science)

PROJECTS

- PI of development and observations of all-sky video meteor camera system AMOS (Automatic Meteoroid Orbits System) of Slovak Video Meteor Network
- Participating on the first European Airborne Meteor Mission EURAF -Draconids 2011 with AMOS cameras.
- PI of the Košice meteorite recovery and analyses scientific consortium.
- Project Coordinator's Research Assistant of ERA Chair project (Space Research and Innovations at Comenius University in Bratislava)
- PI of Comenius Univ. starting grants: No. 24/2003/UK (Meteoroids fragmentation within meteor showers), No.364/2005/UK (Multi-stations observation of meteors), No.401/2007/UK (continuation of Multi-stations observation of meteors)

- Member of research group AGO Modra of The Planetary Society Gene Shoemaker NEO Grant 1998 award (NEO observations and follow up)
- Member of research group of VEGA grant No. 2/7157/20, 2003-2005 (Near Earth Objects, their disintegration and association with other parts of the interplanetary matter); VEGA grant No. 1/3067/26, 2006-2008 (Complexes of small bodies of the Solar System); VEGA grant No. 1/0636/09, 2009-2012 (Genetic relations between meteoroid streams and NEO objects)
- Manager of APVV grant LPP -0378-09, 2009-2012 (Practical Astronomy for Public)
- PI assistant of APVV grant 0516-10, 2010-2014 (Slovak's meteorites)
- PI assistant of APVV grant 0517-12, 2013-2017 (Model of meteoroid population)
- PI of APVV grant 0148-16, 2017-2021 (Physical and dynamical characteristics of meteoroids)
- PI of ESA PECS Slovakia, ESA Contracts No. 4000117170/16/NL/NDe, No. 4000128930/19/NL/SC, 4000136672/21/NL/SC and 4000143603/24/NL/MH/mp
- PI ESA PECS Slovakia, ESA Contract No. 4000128930/19/NL/SC, Study of meteoroid composition by meteor spectroscopy and simulated ablation of meteorites, 2019-2021
- co-PI ERASMUS+ Per aspera ad astra simul (Through difficulties to the stars together) a ERASMUS+, KA2-1-CZ01- KA203-41549DC2-EN-3
- PI of the Puste Ulany recovery and analyses scientific consortium
- PI of APVV grant 23-0323, 2022-2028 (Dynamical and physical properties of meteoroids)

TEACHING AND SUPERVISING OF STUDENTS

2002 to present: Teaching "Planetary Science", "Planetary Cosmogony", "History of Astronomy", "An Introduction to astronomy" courses on Comenius University

2000 to present: Teaching for the University of the Third Age CU Bratislava, general astronomical lectures; popularization of science, astronomy and astrophysics

PhD. supervisor: P. Matlovič (Physical characteristics of meteoroids, 2015 -2019), M. Baláž (2019-2022), K. Havrila (2019-2022), P. Čechvala (2019-2023), F. Hlobík (2022-present), T. Vörös (2024-present)

PhD. consultant: P. Vereš (Population of small bodies close to the Earth - 2010), J. Šilha (Identification of the Artificial Objects in Close Vicinity of the Earth - 2012)

Diploma theses supervisor: P. Vereš (Modeling of NEO orbits in the close vicinity of the Earth -2006), M. Klas (Observational conditions at AGO Modra Observatory -2007), J. Šilha (Space Debris -2008), P. Harvan (Analysis of meteors from all-sky video system at AGO Modra -2009), K. Adameková (Photometry of video meteors -2012), R. Kysel (Analyzes of optical records of TLE -sprites at AGO Modra -2014), P. Matlovič (Physical characteristics of meteoroids -2015), Peter Hrábek (Dynamics of meteorite dark flight-2016), M. Baláž (Determination of Total Meteoroid Flux in Millimetre to Metre Size Range-2018), K. Havrila (Modelling of micrometeorites and meteorites interactions in planetary atmospheres), L. Zsilinszká (Photometric calibration of AMOS system -2018), F. Hlobík (2022), S. Ďurišová (2022), M. Paprskárová (2023), V. Kuksenko (2024), T. Vörös (2024)

• Bachelor theses supervisor of 13 students.

HONORS AND AWARDS

- SOC member of MACE (Meeting on Asteroids and Comets in Europe) meeting series 2003, 2004, 2006
- IAU member and vice-president of commission F1
- International Meteor Organization, vice-president
- Member of Virtual Meteor Observatory working group
- Invention of AMOS (Automatic Meteoroid Orbits System) cameras -patent submitted
- Slovak astronomy mass media personality
- National commission for one of Galileo satellite naming
- International Astronomical Union asteroid (24976) named "Jurajtoth"

- co-discover of 16 MB asteroids
- The dean of FMPI CU scientific prize 2014
- ESTEC ESA invited lecture 04/2016
- IfA, University of Hawaii, invited colloquium, 01/2018
- IMC 2018 conference in Pezinok, Slovakia - head of LOC, member of SOC
- Meteoroids 2019 conference in Bratislava, Slovakia, head of LOC, member of SOC

SELECTED PUBLICATIONS

- Tóth, J., Kornoš, L., Porubčan, V.: 2000, Photographic Leonids 1998 Observed at Modra Observatory, *Earth, Moon and Planets*, **82-83**, 285-294.
- Porubčan, V., Tóth, J., Yano, H.: 2002, On fragmentation of meteoroids in interplanetary space, *Contrib. Astron. Obs. Skalnaté Pleso*, **32**, 132-144.
- Tóth, J. a Klačka, J.: 2004, Fragmentation of Leonids in space and a model of spatial distribution of meteoroids within the Leonid stream, *Earth, Moon and Planets*, **95**, 181-186.
- Pecina, P., Porubčan, V., Pecinová, D., Tóth, J.: Radar observations of Taurid complex meteor showers in 2003, *Earth, Moon and Planets*, 2004, **95**, 681-688.
- Galád, A., Kornoš, L., Gajdoš, Š., Világi, J., Tóth J.: 2004, Relative photometry of numbered asteroids (3712), (4197), (5587), (28753) and (66063), *Contrib. Astron. Obs. Skalnaté Pleso* **34**, 2004, 157-166.
- Vereš, P., Kornoš, L. a Tóth, J.: 2006, Search for very close approaching NEAs, *Contrib. Astron. Obs. Skalnaté Pleso*, **36**, 171-180.
- Tóth J., Kornoš L., Gajdoš, Š., Kalmančok D., Zigo P., Világi J., Hajduková, M. Jr.: 2008, TV Meteor Observations from Modra, *Earth Moon Planet*, **102**, 257-261
- Vereš, P., Klačka, J., Kómar, L., Tóth, J.: 2008, Motion of a Meteoroid Released from an Asteroid, *Earth Moon Planet*, **102**, 47-51
- Kornoš, L., Tóth, J., Vereš, P.: 2008, Orbital Evolution of Příbram and Neuschwanstein, *Earth Moon Planet*, **102**, 59-65
- Vereš, P., Kornoš L., Tóth J.: 2011, Meteor showers of comet C/1917 F1 Mellish, *Mon. Not. R. Astron. Soc.*, **412**, 511-521
- Tóth J., Kornoš L., Vereš, P., Šilha, J., Kalmančok D., Zigo P., Világi J.: 2011, All-sky video orbits of Lyrids 2009, *Publ. Astron. Soc. Japan*, **63**, 311-314.
- Tóth J., Vereš, P., Kornoš L.: 2011, Tidal disruption of NEAs -a case of Příbram meteorite, *Mon. Not. R. Astron. Soc.*, **415**, 1527-1533
- Borovička J., Toth J., Igaz A., Spurny P., Kalenda P., Haloda J., Svoren J., Kornos L., Silber E., Brown P., and Husarik M. 2013. The Kosice meteorite fall: Atmospheric trajectory, fragmentation and orbit. *Meteoritics & Planetary Science* **48-10**, 1757-1779
- Hajduková, M., Kornoš, L., Tóth, J. 2014, Frequency of hyperbolic and interstellar meteoroids, *Meteoritics and Planetary Science*, **49**, 63-68
- Gritsevich M., Vinnikov V., Kohout T., Tóth J., Peltoniemi J., Turchak L., Virtanen J., 2014, A comprehensive study of distribution laws for the fragments of Košice meteorite, *Meteoritics and Planetary Science*, **49-3**, 328-345
- Kohout T., Havrila K., Tóth J., Husárik M., Gritsevich M., Britt D., Borovička J., Spurný P., Igaz A., Svoren J., Kornoš L., Vereš P., Koza J., Zigo P., Gajdoš Š., Világi J., Čapek D., Křišandová Z., Tomko D., Šilha J., Schunová E., Bodnárová M., Búzová D., and Krejčová T. 2013. Density, porosity and magnetic

susceptibility of the Košice meteorite and homogeneity of H chondrite showers. *Planetary and Space Science*, 93-94, 96–100

- Rudawska, R., Zender, J., Jenniskens, P., Vaubaillon, J., Koten, P., Margonis, A., Tóth, J., McAuliffe, J., Koschny, D.: 2014, Spectroscopic Observations of the 2011 Draconids Meteor Shower, *Earth, Moon, and Planets*, **112**, 1-4, 45-57
- Koten, P., Vaubaillon, J., Tóth, J., Margonis, A., Ďuriš, F.: 2014, Three Peaks of 2011 Draconid Activity Including that Connected with Pre-1900 Material, *Earth, Moon, and Planets*, 112, 1-4, 15-31
- Vaubaillon J., Koten P., Margonis A., Toth J. et al., 2015, The 2011 Draconids first European airborne meteor observation campaign, *Earth, Moon, and Planets*, **114**, **3-4**, 137-157
- Tóth J., Svoreň J., Borovička J., Spurný P., Igaz A., Kornoš L., Vereš P., Husárik M., Koza J., Kučera A., Zigo P., Gajdoš Š., Világi J., Čapek D., Křišandová Z., Tomko D., Šilha J., Schunová E., Bodnárová M., Búzová D., and Krejčová, T. 2015. The Košice meteorite fall: Recovery and strewn field, *Meteoritics and Planetary Science* 50 -5, 853-863
- Ozdín, D. Plavčan, J., Hornáčková, M., Uher, P., Porubčan, V., Veis, P., Rakovský, J., Tóth, J., Konečný, Svoreň, J., 2015. Mineralogy, petrography, geochemistry and classification of the Košice meteorite. *Meteoritics and Planetary Science* 50 -5, 864-879
- Povinec, P.P. and Tóth J., 2015. The Fall of Košice meteorite, *Meteoritics and Planetary Science* 50 -5, 851-852
- Rudawska R., Matlovič P., Tóth J., Kornoš L., Independent identification of meteor showers in EDMOND database, *Planetary and Space Science*, 118, 2015, 38-47
- Kornoš L., Tóth J., Porubčan V., Klačka J., Nagy R., Rudawska R., On the orbital evolution of the Lyrid meteoroid stream, *Planetary and Space Science*, 118, 2015, 48-53
- Hajduková M., Rudawska R., Kornoš L., Tóth J., April ρ Cygnids and comet C/1917 F1 Mellish, *Planetary and Space Science*, 118, 2015, 28-34
- Tóth J., Kornoš L., Zigo P., Gajdoš Š., Kalmančok D., Világi J., Šimon J., Vereš P., Šilha J., Buček M., Galád A., Rusňák P., Hrábek P., Ďuriš F., Rudawska R., All-sky Meteor Orbit System AMOS and preliminary analysis of three unusual meteor showers, *Planetary and Space Science*, 118, 2015, 102-106
- Koten P., Vaubaillon J., Margonis A., Tóth J., Ďuriš F., McAuliffe J., Oberst J., Double station observation of Draconid meteor outburst from two moving aircraft, *Planetary and Space Science*, 118, 2015, 112-119
- Rudawska R., Tóth J., Kalmančok D., Zigo P., Matlovič P., Meteor spectra from AMOS video system, *Planetary and Space Science*, 123, 2016, 25-26
- Hajduková, M., Jr., Koten, P., Kornos, L., Tóth, J., Meteoroid orbits from video meteors. The case of the Geminid stream, *Planetary and Space Science*, 143, 89-98
- Matlovič, P., Tóth, J., Rudawska, R., Kornoš, L., Spectra and physical properties of Taurid meteoroids, *Planetary and Space Science*, 143, 104-115
- Gajdoš, Š., Matlovič, P., Kornoš, L., Galád, A., and Tóth, J., “Search for V-type meteoroids”, *Planetary and Space Science*, vol. 189, 2020. doi:10.1016/j.pss.2020.104978.
- Gajdoš, Š., Tóth, J., and Kornoš, L., “October Draconids 2018 outburst by AMOS”, *Planetary and Space Science*, vol. 190, 2020. doi:10.1016/j.pss.2020.104995.
- Baláž, M., Tóth, J., Vereš, P., and Jedicke, R., “ASMODEUS meteor simulation tool”, *Planetary and Space Science*, vol. 190, 2020. doi:10.1016/j.pss.2020.104937.

- Matlovič, P., Pisarčíková, A.; Tóth, J.; Mach, P.; Čermák, P.; Loehle, S.; Kornoš, L.; Ferrière, L.; Šilha, J.; Leiser, D.; Ravichandran, R. “Hydrogen emission from meteors and meteorites: mapping traces of H₂O molecules and organic compounds in small Solar system bodies”, *Monthly Notices of the Royal Astronomical Society*, vol. 513, no. 3, pp. 3982–3992, 2022.
- Devillepoix, H. A. R., Tóth, Juraj ; Matlovič, Pavol ; Cupák, Martin; Towner, Martin C.; Sansom, Eleanor , *Research Notes of the American Astronomical Society*, vol. 6, no. 7, 2022. doi:10.3847/2515-5172/ac81ce.
- Vaubaillon, J., Loir, C. ; Ciocan, C. ; Kandeepan, M. ; Millet, M. ; Cassagne, A. ; Lacassagne, L. ; Da Fonseca, P. ; Zander, F. ; Buttsworth, D. ; Loehle, S. ; Toth, J. ; Gray, S. ; Moingeon, A. ; Rambaux, N. “A 2022 τ -Herculid meteor cluster from an airborne experiment: automated detection, characterization, and consequences for meteoroids”, *Astronomy and Astrophysics*, vol. 670, 2023. doi:10.1051/0004-6361/202244993.
- Vida, D., Brown, P. G.; Devillepoix, H. A. R.; Wiegert, P.; Moser, D.E.; Matlovič, P.; Herd, Ch. D. K.; Hill, P. J. A.; Sansom, E. K.; Towner, M. C.; Tóth, J.; Cooke, W. J.; Hladiuk, D. W. “Direct measurement of decimetre-sized rocky material in the Oort cloud”, *Nature Astronomy*, vol. 7, pp. 318–329, 2023. doi:10.1038/s41550-022-01844-3.
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- Ďurišová, S., Tóth, J., and Hajduková, M., Independent identification of meteor showers from the EDMOND and the search for their parent bodies”, *Planetary and Space Science*, vol. 236, 2023. doi:10.1016/j.pss.2023.105752.
- Pisarčíková, A., Matlovič, P., Tóth, J. et al., Analysis of CN emission as a marker of organic compounds in meteoroids using laboratory simulated meteors, *Icarus*, vol. 404, 2023. doi:10.1016/j.icarus.2023.115682.
- Vovk, M., Koschny, D.; Frühauf, M.; Gscheidle, Ch.; Hugentobler, U.; Heumann, V.; Lips, T.; Fritsche, B.; Maigler, M.; Pessina, V.; Šilha, J.; Tóth, J.; Pazderová, V.; Matlovič, P., “Meteoroid ablation simulations with ESA's SCARAB software”, *Planetary and Space Science*, vol. 238, 2023. doi:10.1016/j.pss.2023.105785.
- Tóth, J., Matlovič, P., et al., Overview of the MetSpec project - Artificial meteors in ground testing, *Icarus*, 2023,115791, doi.org/10.1016/j.icarus.2023.115791.
- David Leiser; Christian Dürnhöfer; Erik Poloni; Stefan Löhle; Pavol Matlovič; Juraj Tóth; Jérémie Vaubaillon, Meteorite temperature measurements during ground testing, *Icarus*, Volume 408, 2024, 115867
- F. Grigat; S. Loehle; J. Vaubaillon; P. Matlovič; J. Tóth, Visual observation of meteorite ablation in plasma wind tunnel experiments, *Icarus*, Volume 422, 2024, 116249.
- Matlovič, P., Pisarčíková, A., Pazderová, V., Loehle, S., Tóth, J., Ferrière, L., Čermák, P., Leiser, D., Vaubaillon, J., Ravichandran, R., Spectral properties of ablating meteorite samples for improved meteoroid composition diagnostics, *Astronomy and Astrophysics*, vol. 689, A323, 2024.

PÍ SOMNÝ SÚHLAS SO ZVEREJŇOVANÍM OSOBNÝCH ÚDAJOV

Meno a priezvisko dotknutej osoby: Juraj Tóth

Fakulta: Fakulta matematiky, fyziky a informatiky Univerzity Komenského v Bratislave

Súhlasím so zverejňovaním osobných údajov v súvislosti s prihláškou na VK na miesto profesora na KAFZM FMFI UK v Bratislave v rozsahu podľa § 76 ods 10 písm. a) zákona č. 131/2002 Z. z. vysokých školách a o zmene a doplnení niektorých zákonov.

V Bratislave dňa 23.9.2024

Podpis dotknutej osoby: