Academic Curriculum Vitae: Dr. Maxim L. Khodachenko

Contact details:
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Personal Data:
- *Occupation:* Senior Academy Scientist / Projects Leader
- *Citizenship:* Austria
- *Family:* 2 children
- <u>Scopus Author ID:</u> **6602219372**;   <u>Researcher ID:</u> **ABE-9806-2020**
- <u>ORCID:</u> https://orcid.org/0000-0001-7954-5131

Publication summary:
- *refereed publications*: **151**; *non-refereed publications*: **184**
- Hirsch index: **36**

Bibliography: on Astrophysical Data System of NASA (**335** publications)
https://ui.adsabs.harvard.edu/search/p_=0&q=%20author%3A%22Khodachenko%2C%20M%22&sort=date%20desc%2C%20bibcode%20desc

Education / academic milestones:

Mar., 1998: Ph.D. in two specialties: 1) Plasma Physics, 2) Astrophysics / Radio Astronomy, awarded at the Institute of Applied Physics, Russian Academy of Sciences

1996-1998: Predoctoral study at the Institute of Applied Physics, Russian Academy of Sciences

1989-1991: Advanced study: Physics of Plasma at the Institute of Applied Physics, Russian Academy of Sciences (2-year internship course as a researcher)

Jul., 1989: M.S. degree in Radiophysics and Electronics, awarded at Nizhny Novgorod State University, Russia

1982-1989: Study at the Department of Radiophysics, Lobachevsky State University, Nizhny Novgorod, Russia (including 2yrs of Military service 1984-1986)

2000-2002: KFUG MS course Space Science (selected subjects)

Professional History / positions held:

2001-present: Senior Academy Scientist (since 2020), Research Scientist (2009-2020), Postdoc (2002-2009) at Space Research Institute, Austrian Academy of Sciences, Graz, Austria; full-time; permanent (since 2014)

1999-2001:   Max-Planck Senior Research Fellow, Max-Planck-Institut für Extraterrestrische Physik, Garching, Germany; full-time; fellowship

1998-1999:   Scientific editor in "Radiophysics and Quantum Electronics" journal (in russian appears as "Izvestiya VUZov Radiofizika"), Nizhny Novgorod, Russia; part-time; contract

1989-1999:   Research Scientist / Junior Research Scientist / Predoctoral student / Postgraduate student, Department of Astrophysics and Space Plasma Physics, Institute of Applied Physics, Russian Academy of Sciences, Nizhny Novgorod, Russia; full-time; permanent (since 1991)

Main Areas of Research & Major Scientific Findings:
- *Exoplanets:* Elaboration of methodology for the in-transit photometric sensing of exoplanetary dusty environments and exorings; Global self-consistent 3D (M)HD modelling of exoplanets immersed in the stellar wind flows and interpretation of transmission spectroscopy phenomena and mass loss in particular transiting exoplanets.
- *Planetary Magnetospheric physics:* Study of the Io-Jupiter Electrodynamic interaction in plasma kinetic approach; Investigation of the varying magnetosphere scales under different solar/stellar wind conditions in application to Mercury, Earth (incl.paleo-magnetosphere) and exoplanets; Magnetodisk dominated magnetospheres of close-orbit

giant exoplanets; Self-consistent kinetic description of charged particles dynamics in astrophysical plasma-magnetic structures with the trajectory method, taking account of the particle gyration phase.

- *Solar/stellar physics:* Elaboration of methodology for probing of stellar deep mixing and activity cycles, as well as for the diagnostics of starspots and stellar dynamos, with the high precision photometry, e.g., that from Kepler space telescope; Investigation of solar activity phenomena and related super-large-scale global turbulence, including wind patterns; Theoretical modelling of plasma processes and energy release in the solar coronal magnetic loops and interpretation of observations; Study of the dynamic processes and waves in the partially ionized plasmas of the solar photosphere, chromosphere and prominences.
- *Radio astronomy, radiation mechanisms, data analysis:* Analysis of the solar radio bursts and diagnostics of solar activity and heliospheric dynamics based on the modulations of planetary (Saturn, Jupiter, Earth) radio emissions. Analysis of coherent radiation mechanisms in solar coronal magnetic loops and manifestation of coronal loop transverse oscillations in solar microwave emission.

Grants and awards as project PI / Coordinator:

European Framework Program projects:

- EU FP7-SPACE: *IMPEx (Integrated Medium for Planetary Exploration,* http://impex-fp7.oeaw.ac.at*)*, 2011-2015 (***1,998,719.03 €***)
- EU FP7-RI: Subdivision *JRA3-EMDAF (European Modelling and Data Analysis Facility,* http://europlanet-jra3.oeaw.ac.at/*)*, 2009-2012 (***178,605.00 €***) in EUROPLANET-RI (10 Mio. €)

Austrian science foundation (FWF) projects:

- S11606-N16 *Magnetospheric electrodynamics of exoplanets*, 2012-2020 (***965,724.00 €***) in Key National research network "*Pathways to habitability*"
- I2939-N27 *Interaction of exoplanetary and stellar winds*, 2016-2019 (***343,177.00 €***)
- P25640-N27 *Energy transport in the solar atmosphere: background flows*, 2014-2017 (***239,641.50 €***)
- P25587-N27 *Manifestations of deep convection in stellar photometry*, 2013-2016 (***285,012.00 €***)
- P21197-N16 *Energy transport / release in solar chromosphere and corona*, 2009-2013 (***227,146.50 €***)

Services to the community:

- Project Reviewer/Lead reviewer in Science Fund of Republic Serbia
- ERC Advanced Grants remote reviewer, European Research Council, EC, (2017)
- Executive Board Member of the "*European Task Force in Laboratory Astrophysics*" (ETFLA), EU FP7 ASTRONET.
- Board Member in FP6 "EuroPlaNet" & "ASTRONET", FP7 "Europlanet-RI", H2020 "Europlanet-2020-RI" projects
- Participant of Steering Committee and/or Convener of different scientific and technology sessions (in the last 10 years): *European Planetary Science Congress*: EPSC-DPS'2011 (Oct.02-07, 2011, Nantes, France); EPSC'2012, (Sep.23-28, 2012, Madrid, Spain); EPSC'2018 (Sep.16-21, 2018, Berlin, Germany); EPSC-DPS'2019 (Sep.15-20, 2019, Geneva, Switzerland)

Supervision of graduate students and postdoctoral fellows:

2009-2021:   Supervision of: 6 Postdocs, 4 Master Students, and 1 Bachelor Student at Space Research Institute of the Austrian Academy of Sciences within the frame of the coordinated EU and national research projects

2012-2013:   Supervision of a PhD student (FemTech Practicum: 'Modelling of Exoplanetary transits') at IGAM, Karl-Franzens University, Graz, Austria

Education and public outreach services:

- President of PhD Committee at University of Ballearic Islands (2013, Spain)
- External examiner in PhD Committee: Univ. Warwick, UK, (2008, 2015); Technical University Graz, AT (2012)
- Invited lecturer at IGAM, Karl-Franzens University, Graz, Austria: "Planetary magnetospheric physics (plasma MHD)" (2003-2004); "Planning, organisation/management of geophysical projects" (2007-2013)
- Invited Lecturer in scientific colloquia: Wilhelm & Else Heraeus Seminar (2013 Germany); IAFA (2009, Austria)

- Summer University Graz in Space, Invited Lectures: "The Sun – our star" (2006), "Exoplanets – definitions and mysteries" (2010), "Exoplanet search methods" (2012)
- Alpen-Adria College (2009): Lect.course "Exoplanets – frontiers of modern planetology, where Sci-Fi meets science"
- International School of Modern Astrophysics (SOMA2016, MIPT): Lect.course: "Distant worlds of exoplanets"

Leadership in industrial innovation and design:

Founding owner of *ITVersum* (Reg.No. 387698w, Austria, 2012). ITVersum is an IT-service & RTD company, established to bridge the gap between (space) sciences and information technologies. The company provides professional IT-expert assistance to scientific groups, to support their research (projects) with tailored IT solutions based on up-to-date technologies and know-how. The company ensures sustainable continuation of several core services elaborated within the EU FP7 project IMPEx (http://impex-fp7.oeaw.ac.at/). The main fields of experience in ITVersum are: • Software Design & Development • Web based application development • Data Management & Protocols • Scientific Research (space physics, informatics & computer science) • Project Development & Management • Machine learning & AI • Cybersecurity • Public Relations & Outreach • IT Consulting • International Cooperation.