CURRICULUM VITAE

1 PERSONAL

Last Name:	Chilingaryan (publishing as Chilingarian)
First Name:	Igor
Phone:	+1-617-4952475 (office)
Email:	chil@sai.msu.ru, igor.chilingarian@cfa.harvard.edu
Date of birth:	May 16th, 1980
Place of Birth:	Moscow, USSR
Citizenship:	Russian / French bi-national
Family status:	Single, never married
Languages:	Russian (native), English (fluent)
	French (good), Spanish (basic)
Hobbies:	Sports (table tennis: university team level; mountaineering; rock climbing)
	Cycling Tours, Photography, Travel,
	UNIX System and Network Administration, Software Development
Affiliations:	Armenian Astronomical Society
	Société Française d'Astronomie et d'Astrophysique
	Moscow State University Alumni

2 EMPLOYMENT HISTORY

- 1995–2000: part-time jobs related to system administration, software and web development
- 2001: Institute of X-ray Optics, part-time job: programming of micro-controllers
- 2001–2002: research assistant at SAO RAS under supervision of Prof. V. Afanasiev and Dr. S. Dodonov (total duration of stay in the observatory in 1998–2002 about 18 months, including ~50 nights of observations with various instruments, mostly 3D spectroscopy)
- Sep/2003 Jan/2004: Teaching as part of a PhD course: "Programming for Astronomers" course for 1st and 2nd year undergraduates at MSU.
- Dec/2004 Feb/2005: Invited researcher at the Observatoire de Paris, Paris Virtual Observatory project
- Apr/2005 Dec/2006: Researcher (half-time) at the Sternberg Astronomical Institute (SAI), MSU, Russia
- Dec/2006 present: researcher, then leading researcher on leave at SAI MSU, Russia
- Dec/2006 Nov/2009: CNRS-funded temporary contract (CDD) within the "Horizon" project, LERMA Observatory of Paris, France
- Dec/2009 Aug/2011: Postdoc at Centre de Données Astromoniques de Strasbourg, Observatory of Strasbourg: 50% research, 50% duties (Virtual Observatory)
- Sep/2011 present: Astronomer at Telescope Data Center, Optical and Infrared Astronomy Division, Smithsonian Astrophysical Observatory

3 EDUCATION

Pre-University

1987 – 1994: Musical school of the Moscow Conservatoire (2nd top ranked in Russia)

• Certificate of basic musical education (piano)

1992-1997: High School 1534 advanced in physics and mathematics, Moscow

• State certificate of high-school education, excellent grade in all disciplines, gold medal

Five astronomy-related publications in Russian popular-science journals in 1995–1997.

Undergraduate

Sep 1997 – Jan 2003: Master of Astronomy at the Moscow State University, Department of Experimental Astronomy of the Faculty of Physics.

- Apr 2001: Undergraduate Thesis in Astronomy: "The Spiral Galaxy NGC 23: Photometry and Kinematics", advisor: Dr. O. Khoruzhii, Institute of Astronomy, Russian Academy of Sciences (RAS)
- Dec 2002: Diploma Thesis in Astronomy: "Classification of Objects by Their Spectral Energy Distributions", advisor: Dr. S. Dodonov, Special Astrophysical Observatory of RAS.
- Degree (22/Jan/2003): specialist in astronomy, diploma with distinction, gold medal, qualified as Master-M2 by the University of Lyon-1

Graduate

Apr 2003 – Nov 2006: PhD in Astrophysics at the Moscow State University Department of Experimental Astronomy, Faculty of Physics.

- Title: "Formation and Evolution of Dwarf Elliptical Galaxies" Feb/2005 – Nov/2006: co-supervised PhD between Moscow State University and Université Lyon-1 Claude Bernard (Lyon, France).
- Advisors: Dr. Olga Sil'chenko and Dr. Philippe Prugniel
- Funding: INTAS Young Scientist Fellowship
- Degrees (23/Nov/2006): PhD in astrophysics (University of Lyon-1) and candidate of physics and mathematical sciences, speciality 01.03.02 "astrophysics, radioastronomy" (Moscow State University)

07/Oct/2010): Doctor of physics and mathematical sciences (habilitation), speciality 01.03.02 "astrophysics, stellar astronomy" (Moscow State University)

• Title: "Evolution of early-type galaxies from observations, simulations, and the Virtual Observatory"

4 RESEARCH AND TECHNOLOGICAL PROJECTS

The participation is indicated as follows: *period of time: project – role*

- 1999–2002: VORTEX, search of new structures in spiral galaxies analysis and interpreting Fabry-Perot data cubes and resulting velocity fields
- 2000–2003: Search for primeval galaxies and very distant QSO's with 6-m telescope development and implementation of algorithms for photometrical classification and redshifts
- 2000–2006: HyperLEDA responsible for the database system
- 2001–2004: AstroNET (Russian Astronomical Network) Sky Map online project, http://www.astronet.ru/db/map/ – principal developer
- 2002–2004: Studies of nearby AGNs automatic normalization of AGN spectra
- 2003–2004: MASTER project, GRB optical follow-up development of the fully automatic data processing pipeline, interpreting the results
- \bullet 2003–2004: pgSphere, methods to deal with spherical coordinates in PostgreSQL DBMS software developer
- 2004–2010: ASPID (Archive of Spectral, Photometric, and Interferometric Data) at SAO RAS (http://alcor.sao.ru/db/aspid/; http://alcor.sao.ru/php/search) PI
- 2004–2011: VO-Paris (Paris Virtual Observatory) development of VO services and applications in the Observatoire de Paris-Meudon, supporting VO resource registry
- 2005–present: Member of the "Data Models" Working Group of the International Virtual Observatory Alliance (IVOA) development of the Characterisation Data Model of IVOA, application to 3D-spectroscopy, scientific applications
- 2006–present: Spectroscopic studies of low-luminosity early-type galaxies in the nearby clusters PI, data analysis (ESO/VLT FLAMES, SAO RAS/BTA MPFS), scientific interpretation
- 2006–2010: The nature of gas-rich E+A galaxies data analysis (ESO/VLT VIMOS), extraction of internal kinematics and stellar population parameters, scientific interpretation
- 2006–2011: HORIZON GalMer Database tools to generate synthetic spectra of galaxy mergers, to manipulate and display the data, creating and managing the database and the project web-site (http://galmer.obspm.fr/)
- 2007–present: Search of compact elliptical, ultra-compact dwarf and tidally stripped galaxies in the Virtual Observatory PI, development and implementation of algorithms, data analysis, scientific interpretation
- 2008–present: RCSED, a multi-wavelength value-added catalogue of spectral energy distributions, kinematics and stellar population properties of nearby galaxies PI
- 2011–present: Data reduction pipelines for the MMIRS and FIRE infrared spectrographs PI
- 2012–present: Las Campanas Stellar library: the most comprehensive collection of near-infrared stellar spectra PI

- 2014–present: Ultra-deep NIR probes to study high-redshift galaxies and the evolution of the mass–metallicity relation since z = 1.5 co-PI
- 2017–present: Binospec dual-channel multi-object spectrograph at the MMT (co-I) and its data reduction pipeline (PI)
- 2017-present: Search and follow-up studies of intermediate-mass black holes PI
- 2018–present: Origin and evolution of ultra-diffuse galaxies in clusters PI

5 AWARDS and GRANTS

High-school

- 1994, Moscow Olympiad in Chemistry, 2nd prize
- 1995, Moscow Olympiad in Chemistry, 4th prize
- 1995, Moscow Olympiad in Astronomy, 1st prize
- 1995, Russian National Olympiad in Astronomy and Space Physics, 1st prize
- 1996, Moscow Olympiad in Astronomy, 2nd prize
- 1996, Russian National Olympiad in Astronomy and Space Physics, 1st prize
- 1996, First International Astronomical Olympiad, 1st prize
- 1997, Moscow Olympiad in Astronomy, 1st prize
- 1997, Russian National Olympiad in Astronomy and Space Physics, 1st prize

University (undergraduate and graduate), post-doctoral, professional Awards:

- 2001: 1st prize on the student research work competition in astronomy "Astronet-2001" for the Undergraduate Thesis
- 2003: 1st prize on the student research work competition in astronomy "Astronet-2003" for the Master Thesis
- 2003: D. Martynov award for the Master Thesis.
- 2004: Personal PhD student stipend of the Government of the Russian Federation
- 2006: 2nd prize for the PhD thesis on the competition of young researchers in physics organized by the Faculty of Physics of the Moscow State University
- 2007: Armenian Astronomical Society Annual Prize for young astronomers
- 2012: Medal for young scientists by the Russian Academy of Sciences in physics and astronomy

Personal grants: 21 Personal travel and research grants (as PI) including 2 postdoc offers in $2002{-}2009$

• 2002: Russian Foundation for Basic Research (RFBR) young researcher grant in Informational Technologies (02-07-06096)

- 2003: RFBR young researcher grant in Informational Technologies (03-07-06116)
- 2003: ADASS organizing committee grant to attend ADASS-XIII
- 2004: European Astronomical Society travel grant to attend JENAM-2004
- 2004: RFBR travel grant and ADASS organizing committee grant to attend ADASS-XIV
- 2005: IAU grant to attend IAU Colloquium 198
- 2005: INTAS Young Scientist Fellowship (PhD) (2 years, 04-83-3618)
- 2005: RFBR travel grant and ADASS organizing committee grant to attend ADASS-XV
- 2005: ESO travel grant to attend ESO–Euro3D Workshop
- 2006: Travel grant of the organizing committee of "Mapping the Galaxy and Nearby Galaxies"
- 2006: RFBR travel grant and ADASS organizing committee grant to attend ADASS-XVI
- 2006: IAU grant to attend IAU Symposium 241
- 2007: Travel grant of the organizing committee of "Pathways Through an Eclectic Universe"
- 2007: IAU grant to attend IAU Symposium 245
- 2007: EAS grant to attend JENAM-2007
- 2007: ADASS organizing committee grant to attend ADASS-XVII
- 2007: Gemini Science Fellow (Chile) declined
- 2008: ADASS organizing committee grant to attend ADASS-XVIII
- 2009: ESO Visiting Scientist (1 month in Santiago)
- 2009: IAU grant to attend IAU General Assembly
- 2009: AAO Magellan Fellowship (postdoc) declined

Research grants:

- Co-investigator in several Russian Foundation for Basci Research research grants (2002–2012) in astronomy and IT
- PI and co-investigator in several research projects (2006–2011) funded by VO-France (Action Specifique de l'Observatoire Virtuel), VO-Paris Data Centre, PNG/PNCG (Programme Nationale Galaxies).
- President of Russia grant for young DSc (2012–2013) PI (awarded ~\$33.000/yr for two years)
- President of Russia grant for young DSc (2015–2016) PI (awarded ~\$21.000/yr for two years)
- Joint grant between Russian Foundation for Basic Research and French CNRS (2015-2016) PI on the Russian side (awarded ~\$25.000/yr for two years)
- Russian Foundation for Basic Research grant to support research groups led by young scientists (2015–2017) – PI (awarded ~40000/yr for two years)

- Russian Science Foundation grant to support existing laboratories (2014–2016) co-PI (awarded ~\$350000/yr for 3 years)
- Russian Science Foundation grant to support small research groups under supervision of young scientists (2017–2020) co-I (awarded \$80000/yr for 3 years)
- Russian Science Foundation grant to support small research groups (2019–2021) PI (awarded \$100000/yr for 3 years)
- Leading Research School in Astronomy at Moscow State University (2018–2020) co-PI (leader of the extragalactic astronomy section)
- NASA grant via Chandra X-ray Center (2017) PI (awarded \$18000)
- NASA grant via Chandra X-ray Center (2018) PI (awarded \$18000)

6 CONFERENCES and SEMINARS

Conferences and workshops (attended personally):

- 1. Lomonosov-2003 student conference, physics-astronomy section (Moscow, Russia, 14 March 2003): talk
- 2. ADASS-XIII (Strasbourg, France, 12-15 Oct 2003): poster
- 3. IVOA Interoperability Meeting (Strasbourg, France, 16-17 Oct 2003)
- 4. Russian National Astronomical Conference VAK-2004 (Moscow, 24-28 May 2004): 3 posters + co-author of 3 talks
- 5. JENAM-2004 (Granada, Spain, 14-17 September 2004): talk + 2 posters
- 6. IVOA Interoperability Meeting (Pune, India, 27-30 Sep 2004)
- 7. ADASS-XIV (Pasadena, USA, 24-27 October 2004): poster
- 8. AVO Science Demo (Villafranca del Castillo, Spain, 25 Jan 2005)
- 9. International Astronomical Union Colloquium 198 (Les Diablerets, Switzerland, 14-18 March 2005): poster + co-author of a talk
- 10. IVOA Interoperability Meeting (Kyoto, Japan, 14-18 May 2005): talk
- 11. ADASS-XV (El Escorial, Spain, 2-5 Oct 2005): talk + co-author of 2 posters
- 12. IVOA Interoperability Meeting (Villafranca del Castillo, Spain, 6-7 Oct 2005): talk
- 13. ESO Workshop: Science Perspectives for 3D Spectroscopy (Garching, Germany 10-13 Oct 2005): poster + co-author of 1 poster and 1 talk
- 14. IVOA Interoperability Meeting (Victoria, Canada, 15-18 May 2006): talk
- 15. Mapping the Galaxy and Nearby Galaxies (Ishigaki, Japan, 26-30 Jun 2006): poster
- 16. IVOA Interoperability Meeting (Moscow, Russia, 18-22 Sep 2006): talk
- 17. ADASS-XVI (Tucson, USA, 15-18 Oct 2006): poster + co-author of a poster

- IAU Symposium 241 (La Palma, Spain, 11-15 Dec 2006): 2 posters + co-author of 1 poster and 1 talk
- ESA Workshop "Optical Spectroscopy and the Virtual Observatory" (Villafranca del Castillo, Spain, 21-23/Mar/2007): talk + co-author of 3 posters, member of the Science Organizing Committee
- 20. "Pathways Through an Eclectic Universe" (Playa de La Arena, Tenerife, Spain, 23-27/Apr/2007): **poster**
- 21. IVOA Interoperability Meeting (Beijing, China, 14-18 May 2007): talk
- 22. VO-France Theory Group Workshop (Lyon, France, 18-19 Jun 2007): talk
- 23. IAU Symposium 245 (Oxford, UK, 16-20 Jul 2007): poster
- 24. JENAM-2007 (Yerevan, Armenia, 20-25 Aug 2007): 2 talks + co-author of 3 posters
- 25. ADASS-XVII (London, UK, 23-26 Sep 2007): poster + co-author of a poster
- 26. IVOA Interoperability Meeting (Cambridge, UK, 27-28 Sep 2007): talk
- 27. "Spectroscopy for Cosmology and Galaxy Evolution 2005-2015" (Granada, Spain, 3-5 Oct 2007): talk
- 28. "Formation and Evolution of Galaxies in the Prospective of MUSE" (Lyon, France, 7-9 Nov 2007): talk and live demo
- 29. VO-France meeting (Paris, France, 26-28 Nov 2007): 2 talks
- 30. "Nuclear Star Clusters Across the Hubble Sequence" (Heidelberg, Germany, 25-27 Feb 2008): talk
- 31. "Galactic Structure and the Structure of Galaxies" (Ensenada, Mexico, 17-21 Mar 2008) poster
- 32. IVOA Interoperability Meeting (Trieste, Italy, 19-23 May 2008): 2 talks
- 33. "Gas and Stars in Galaxies: a Multi-Wavelength 3D Perspective" (ESO, Germany, 10-13 Jun 2008): talk
- "21st meeting of CODATA (CODATA-08). Session on Astronomical Data and the Virtual Observatory." (Kiev, Ukraine, 3-8 Oct 2008): 2 talks
- 35. IVOA Interoperability Meeting (Baltimore, USA, 27-31 Oct 2008): 2 talks
- 36. ADASS-XVIII (Quebec-city, Canada, 2-5 Nov 2008): poster
- 37. "Multi-wavelength Astronomy and the Virtual Observatory Workshop." (Villafranca del Castillo, Spain, 1-3 Dec 2008): invited talk
- 38. "ESO Star Cluster Workshop" (Santiago, Chile, 10 Mar 2009): talk
- 39. IVOA Interoperability Meeting (Strasbourg, France, 19-23 May 2009): 2 talks
- 40. Galaxy wars: star formation and stellar population in interacting galaxies (Johnson-city, TN, USA, 20-23 Jul 2009): talk

- 41. XXVI IAU General Assembly (Rio de Janeiro, Brazil, 3-14 Aug 2009): 3 posters
- 42. Nearby Dwarf Galaxies (SAO RAS, Russia, 14-18 Sep 2009): talk
- 43. ADASS-XIX (Sapporo, Japan, 4-7 Oct 2009): talk
- 44. VO-France meeting (Paris, France, 28-29 Oct 2009): talk
- 45. IVOA Interoperability Meeting (ESO, Garching, Germany, 9-12 Nov 2009): talk
- 46. IVOA Interoperability Meeting (Victoria, Canada, 17-21 May 2010): 2 talks
- 47. Dynamics and evolution of disc galaxies (Moscow, Russia, 31/May-04/Jun 2010): invited review
- 48. European Planetary Science Congress (Rome, Italy, 20-24/Sep/2010): invited talk
- 49. Early-type Dwarf Galaxies: Origin, Evolution, Characteristics (Heidelberg, Germany, 18-20/Oct/2010): invited talk
- 50. ADASS-XX (Boston, USA, 7-11 Nov 2010): talk
- 51. IVOA Interoperability Meeting (Nara, Japan, 7-11 Dec 2010): 2 talks
- 52. EuroVO-ICE Technology Forum (Trieste, Italy, 12-14 Apr 2011): talk
- 53. IVOA Interoperability Meeting (Naples, Italy, 15-19 May 2011): live demo
- 54. EWASS/JENAM (St.Petersburg, Russia, 4-8 Jul 2011): invited talk + 2 talks
- 55. IAU Symposium 284 (Preston, UK, 5-9 Sep 2011): poster + co-author of a poster
- 56. ADASS-XXI (Paris, France, 6-10 Nov 2011): poster + co-author of 2 posters
- 57. XXVII IAU General Assembly (Beijing, China, 20-30 Aug 2012): **3 posters + co-author of 2 posters**
- 58. ADASS-XXII (Champaign, IL, USA, 4-8 Nov 2012): tutorial + poster + co-author of a poster
- 59. GMTIFS Science Workshop (Pasadena, CA, USA, 12-13/Mar 2013): talk
- 60. ADASS-XXIII (Waikaloa, HI, USA, 29/Sep 3/Oct 2013): poster + co-author of a 2 posters
- 61. Annual Conference on High-Energy Astrophysics (Moscow, Russia, 24-27/Dec 2014): talk
- 62. ADASS-XXV (Sydney, Australia, 25-29/Oct 2015): tutorial + poster + co-author of a poster
- 63. ESO Calibration Workshop 2017 (Santiago, Chile, 16-18 Jan 2017): talk
- 64. JWST Workshop on Star Formation and Nearby Galaxies (Pasadena, CA, USA, 18-20 Jan 2017): talk
- 65. Elusive AGN in the next era (Fairfax VA, 12-15 Jun 2017): talk
- 66. ADASS-XXVII (Santiago, Chile, 22-26 Oct 2017): poster

- 67. 3rd International Workshop on Spectral Stellar Libraries (Campos do Jordao, Brazil, 6-10 Feb 2017): talk
- 68. 29th Texas Symposium on Relativistic Astrophysics (Capetown, South Africa, 4-8 Dec 2017): talk
- XXX IAU General Assembly: Focus Meeting on Calibration and Standardization Issues in UV-VIS-IR Astronomy (Vienna, Austria, 20-31 Aug 2018): talk
- 70. ADASS-XXVIII (College Park MD, USA, 11-15 Nov 2018): poster + short talk
- 71. Life and Death of Star-Forming Galaxies (Perth, Australia, 18-22 Mar 2019): **poster + short** talk
- 72. High-Energy Astrophysics 2018 (Moscow, Russia, 17-22 Dec 2018): invited talk
- 73. MMT 40th Anniversary Symposium (Tucson AZ, USA, 14-16 May 2019): talk + invited tutorial
- 74. IAU Symposium 355: The Realm of the Low Surface Brightness Universe (Tenerife, Spain, 8-12 Jul 2019): talk
- 75. 235th AAS Meeting (Honolulu HI, USA, 4-8 Jan 2020): talk + demo booth

Invited seminars/lectures:

- 1. Jan/2001: Seminar of the Department of Theoretical Physics, Faculty of Physics, Moscow State University, Russia
- 2. Sep/2002: General Seminar of the Special Astrophysical Observatory of RAS, Russia
- 3. Dec/2002: Seminar of the CRAL Observatoire de Lyon, Lyon, France
- 4. Jan/2005: Virtual Observatory Seminar of the Observatoire de Paris-Meudon, France
- 5. Feb/2005: Seminar of the GEPI laboratory, Observatoire de Paris-Meudon, France
- 6. Jun/2005: Seminar of the Institute of Astronomy, Russian Academy of Sciences, Russia
- 7. Feb/2006: Seminar of Astrophysics and Stellar Astronomy Department of Sternberg Astronomical Institute, Russia
- 8. Nov/2006: General Seminar of the Institute of Astronomy, RAS, Russia
- 9. Nov/2006: Seminar of Astrophysics and Stellar Astronomy Department of SAI MSU, Russia
- 10. Jun/2007: Seminar of the LERMA laboratory, Observatoire de Paris-Meudon, France
- 11. Oct/2007: 3 invited lectures and 2 hands-on demo sessions at the Virtual Observatory School (Institute of the Theoretical Physics and Astronomy, University of Vilnius, Lithuania)
- 12. Oct/2007: Seminar of the Observatory of Gent, University of Gent, Belgium
- 13. Feb/2008: Seminar of the Geneva Observatory, Versoix, Switzerland
- 14. May/2008: Seminar on Astronomical Instrumentation of SAI MSU, Russia
- 15. Aug/2008: General Seminar of the Special Astrophysical Observatory of RAS, Russia

- 16. Sep/2008: "Science tea" seminar at Hertzberg Institute of Astrophysics, Victoria, Canada
- 17. Mar/2009: "Vitacura science lunch": seminar at European Southern Observatory, Santiago, Chile
- May/2009: Virtual Observatory tutorial for students and staff members at SAI MSU, Moscow, Russia
- 19. May/2009: "Virtual Observatory day at the Observatoire de Cote d'Azur", Nice, France
- 20. May/2009: Seminar of the LERMA laboratory, Observatoire de Paris-Meudon, France
- 21. Jun/2009: Virtual Observatory Seminar of the Observatoire de Paris-Meudon, France
- 22. Dec/2009: Seminar of Astrophysics and Stellar Astronomy Department of SAI MSU, Russia
- 23. Jan/2010: Seminar of Observatoire de Besancon, France
- 24. Mar/2010: Seminar of Astrophysics and Stellar Astronomy Department of SAI MSU, Russia
- 25. May/2010: General Seminar of the Special Astrophysical Observatory of RAS, Russia
- 26. May/2010: Seminar at the Department of Astronomy, Washington State University, USA
- 27. Jun/2010: Virtual Observatory tutorial (8h, joint with I. Zolotukhin) for the staff of Paris Observatory and Paris Institute of Astrophysics, France
- 28. Jun/2010: Invited lecture and a hands-on demo session at the Astroinformatics and the Virtual Observatory summer school (University of Belgrade, Serbia)
- 29. Sep/2010: Seminar of the Astrospace centre, Lebedev Physics Institute, Russia
- 30. Sep/2010: Lecture at the IAU International School for Young Astronomers-2010, Yerevan, Armenia
- 31. Nov/2010: Tutorial at the ADASS-XX conference, Boston, USA
- 32. Dec/2011: Seminar at GEMINI-South/CTIO, Chile
- 33. Mar/2012: Colloquium at ESO/Vitacura, Chile
- 34. Mar/2012: Extragalactic talk at ESO/Vitacura, Chile
- 35. May/2012: Optical and Infrared Astronomy Division Seminar, Harvard-Smithsonian Center for Astrophysics, Cambridge, USA
- 36. Sep/2012: Invited lecture at the GAIA/LSST Visualisation School, Seattle, USA
- 37. Nov/2012: Tutorial at the ADASS-XXII conference, Urbana, USA
- 38. Mar/2013: Harvard Institute of Theory and Computations lunch talk, Cambridge, USA
- Sep/2013: Optical and Infrared Astronomy Division Seminar, Harvard-Smithsonian Center for Astrophysics, Cambridge, USA
- 40. Mar/2015: 30-min lunch talk at ESO/Vitacura, Chile
- 41. May/2015: Harvard Institute of Theory and Computations lunch talk, Cambridge, USA

- 42. Oct/2015: Seminar at Swinburne University of Technology, Australia
- 43. Oct/2015: High Energy Division Seminar, Harvard-Smithsonian Center for Astrophysics, Cambridge, USA
- 44. Feb/2016: Colloquium at ESO/Vitacura, Chile
- 45. May/2016: Seminar at Sternberg Astronomical Institute, Russia
- 46. Oct/2016: Seminar at Stenberg Astronomical Institute, Russia
- 47. Feb/2017: Seminar of the LERMA laboratory, Observatoire de Paris, France
- 48. May/2017: Seminar at the joint Yandex / Higher School of Economics Data Science Laboratory, Moscow, Russia
- 49. Jun/2017: Seminar of Cerro-Tololo Inter-American Observatory, Chile
- 50. Dec/2017: Seminar of South African Astronomial Observatory, South Africa
- 51. Jan/2018: Mini-Lecture Series (3 days) at American University of Sharjah, UAE
- 52. Apr/2018: Seminar at Pontifica Universidad Catolica, Chile
- 53. May/2018: Invited presentation at the Multiple Mirror Telescope Science Council
- 54. Sep/2018: Seminar at LAstro, Ecole Polytechnique Federale de Lausanne, Switzerland
- 55. Feb/2019: Seminar at New York University Abu Dhabi, UAE
- Feb/2019: Seminar of the Optical and Infrared Astronomy Division, Harvard-Smithsonian Center for Astrophysics, USA
- 57. Mar/2019: Seminar of the LERMA laboratory, Observatoire de Paris, France
- Mar/2019: Seminar of the Optical and Infrared Astronomy Division, Harvard-Smithsonian Center for Astrophysics, USA
- Apr/2019: Seminar of the High-Energy Astrophysics Division, Harvard-Smithsonian Center for Astrophysics, USA
- 60. Apr/2019: Seminar at Astrophysics Institute of Potsdam, Germany

7 PUBLIC OUTREACH ACTIVITIES

- Jun/2013: Public lecture on Virtual Observatory at the Polytechnic Museum Lectorium, Moscow, Russia
- Mar/2015: Public lecture at the "Astrofest" amateur astronomy festival, Moscow, Russia
- Jan/2017: Introductory lecture at the School for Young Astronomers (high school students), Moscow, Russia

8 TECHNICAL / OBSERVATIONAL EXPERIENCE

18 months (in total) of research assistant / night assistant work at the Special Astrophysical Observatory (SAO RAS) during 5.5 years of the "master of astronomy" course of the Moscow State University (09/1997 – 01/2003), totally \sim 50 nights at the 6-m telescope BTA including support of service mode observations. 15 nights of observations as a visiting observer at BTA in 2004-2010; 50 nights at Magellan/Baade; 60 nights at Magellan Clay; 100 nights at MMT in 2011-2020 including support for MMIRS queue observations;

Observations

- 1. Optical *3D-spectroscopy* using MPFS (Multi Pupil Fiber Spectrograph), MOFS (Multi Object Fiber Spectrograph) and IFP (Fabri-Perot Interferometer) at BTA (Russian 6-m telescope of SAO RAS)
- 2. Optical *multi-slit spectroscopy*, *long-slit spectroscopy*, and *direct imaging* at BTA with the SCORPIO universal spectrograph
- 3. Optical long-slit spectroscopy and direct imaging with the 1-m Zeiss telescope (SAO RAS)
- 4. Optical *IFU spectroscopy* with the Calar-Alto 3.5m telescope using PMAS
- 5. Optical *multi-slit spectroscopy*, *long-slit spectroscopy* at Magellan with IMACS and at MMT with Binospec; support of Binospec data reduction
- 6. NIR *multi-slit spectroscopy, long-slit spectroscopy,* and *direct imaging* at Magellan with MMIRS; support of MMIRS operations and data reduction
- 7. NIR echelle spectroscopy at Magellan with FIRE

Astronomical data reduction

- 1. optical IFU spectroscopy (fiber-lens spectrographs) using the original RSI IDL software package to process IFU data coming from MPFS (6-m telescope), GMOS (Gemini), FLAMES-Giraffe (ESO), PMAS (Calar-Alto), and VIMOS-IFU (ESO)
- 2. optical multi-object spectroscopy (multi-slit, multi-fiber): developed a data reduction pipeline for Binospec (MMT)
- 3. optical long-slit spectroscopy from various instruments, including extremely low surface brightness absorption-line objects (down to $\mu_B = 25.5 \text{ mag arcsec}^{-2}$)
- 4. optical direct images from various large and small telescopes (incl. development of the data processing pipeline for robotic telescope)
- 5. optical scanning Fabry-Perot interferometry
- 6. optical and near-infrared intermediate- and high-resolution Echelle spectroscopy: developed data reduction pipelines for FIRE and MagE (Magellan)
- 7. NIR multi-slit and long-slit spectroscopy: developed a data reduction pipeline for MMIRS (MMT/Magellan Infrared Spectrograph)

Astronomical data analysis

- 1. integrated photometry: DAOphot/IDLphot, SExtractor
- 2. **surface photometry**: elliptical isophotes analysis (IRAF ellipse), 1D and 2D (GalFit) brightness profile decomposition; colour maps using adaptive 2D binning algorithm
- 3. azimuthal Fourier analysis of images and velocity fields
- 4. **line-strength indices**: computing and interpreting absorption line strengths in terms of stellar populations
- 5. **full spectral fitting**: extraction of absorption- and emission-line kinematics, chemical abundances and stellar population properties of galaxies; high-precision radial velocities of stars
- 6. **stellar population modelling**: PEGASE2/PEGASE.HR, applications to results of N-body simulations
- 7. **workflows**: development of automatic and semi-automatic pipelines for data discovery, retrieval and analysis using Virtual Observatory technologies

Skills in IT and computational science

High-level UNIX hacker, able to read/write/debug code and scripts of any level of complexity in any major programming language. Level of experience is indicated as follows: (a) – advanced, (g) – good, (b) – basic

- 1. Hardware (incl. maintenance): PC–ix86 (a), Sun Sparc/UltraSPARC (b), DEC Alpha (b), Atmel and Scenix micro-controllers (a)
- 2. OS (user): Linux/*BSD/Solaris/Tru64 Unix/Mac OS X/Windows (a) for all
- 3. OS (system administrator): Linux (a)/ *BSD (g) / Solaris (g) / Mac OS X (g) / Windows NT/2k/XP (b)
- 4. Clusters: MOSIX on Linux (g), OpenMOSIX (b)
- 5. **DBMS**: BerkeleyDB (b), MySQL (b), PostgreSQL (a)
- 6. **Programming**: C (a) / C++ (g) / Perl (a) / Fortran (g) / Pascal (g) / Java (a) / Javascript (g) / XML (b) / x86 Assembler (b)
- Algorithms: standard numerical techniques and statistics: χ² minimization, maximum-likelihood method, fast Fourier transform, etc. (a), image deconvolution and reconstruction (b), artificial neural networks (b), genetic algorithms (b), pattern recognition (b)
- 8. Internet: TCP/IP (a), secure protocols (g), Web-development (a), CGI (a), Web-services (g), Web-2.0 technologies (g)
- 9. Science and astronomy software: IDL/GDL (a) / Maple (g) / GSL GNU Science Library (g) / CFITSIO (a) / MIDAS (b) / IRAF (b) / LaTeX (g) / Python (b)

9 SCIENTIFIC ACTIVITIES

Publications:

- \bullet 66 (24 as the 1st author) refereed papers published including 2 in press + 2 peer-reviewed Virtual Observatory standards
- 40 (25 as the first author) published conference proceedings in 2003–2017,
- 14 Gamma-Ray Burst Network Circulars (GCN) in 2003–2004

See details in the list of publications.

2111 citations (1141 as the first author) listed in NASA ADS as of Apr/2020; H-index: 25 Peer-reviewing:

- arXiv astro-ph moderator
- Journal articles: Nature, A&A, MNRAS, ApJS, ApJL, ApJ, PASP, Journal of Physics B, Astronomy & Computing, Astronomy Letters
- PhD thesis: Chris Usher 2013 (Swinburne University of Technology, Australia)
- Telescope time proposals: Gemini Fast-Turnaround Programs (USA TAC), Chinese Telescope Access (China), Canado-Franco-Hawaiian Telescope (Canadian TAC)
- Grant proposals: National Science Foundation (USA), European Research Council advanced grants, Canadian Research Agency, Russian Science Foundation: two dozens of grants from small research groups (~\$150k/yr) to key projects in Russian astronomy (~\$15M/yr)

Observing programmes:

- XMM-Newton: three accepted proposals in 2018–2020, ~600 ksec in total (PI)
- NASA Chandra X-ray observatory Cool Attitude Targets program in 2019–... (PI)
- 2 Director's Discretionary Time programs at NASA Chandra X-ray observatory in 2017 and 2018 (PI)
- 4h at Gemini-North, Fast-Turnaround program (2017): GMOS-N (PI)
- 12 nights at Magellan/Baade 6.5m (2017–2020): MagE optical Echelle spectrograph (PI)
- 20 nights at Magellan/Baade 6.5m (2013–2020): FIRE NIR spectrograph (PI)
- 23 nights at MMT 6.5m (2015–2016): MMIRS NIR spectrograph (PI)
- 6+8 nights at Magellan/Clay 6.5m (2014–2015): MMIRS NIR spectrograph (PI+co-I)
- 2 nights at Magellan/Baade 6.5m (01/2012): IMACS spectrograph (PI)
- 96 hours at VLT/UT4 8m (2010-2016): SINFONI+LGS NIR spectrograph (co-I)
- 5 nights at the Calar-Alto 3.5m (2009–2010): PMAS IFU spectrograph (co-I)
- 8 nights at the Russian 6-m telescope (2008–2010): SCORPIO universal spectrograph (PI)
- Director's Discretionary Time at the Calar-Alto 3.5m (2008): TWIN spectrograph (PI)

- Director's Discretionary Time at the Calar-Alto 3.5m (2007): PMAS IFU spectrograph (PI)
- Observing time in a frame of several proposals as Co-Investigator (about 20 nights at the Russian 6-m telescope (2003-2007): MPFS IFU spectrograph, SCORPIO universal spectrograph and imager; 3 nights at VLT: VIMOS in the IFU mode)
- Substantial observational experience (about 100 nights of observations) using various instruments at the Russian 6-m telescope: IFU, multi-object, multi-slit, and long-slit spectroscopy, direct imaging, Fabry-Perot interferometry; Las Campanas observatory (Magellan Baade and Clay 6.5m telescopes)

Student supervision:

- 2007 2008: Supervision of a student A. Novikova (master thesis in astronomy at the Moscow State University, Russia, defended on 24/Dec/2008).
- **2008 2009**: Co-supervision of a PhD student I. Zolotukhin (Moscow State University, defended on 1/Oct/2009)
- 2012 2014: Co-supervision of a PhD student A. Kasparova (Moscow State University, defended on 17/May/2014)
- 2014 2015: Supervision of a senior thesis by an undergraduate student K. Blancato (Wellesley college, defended 11/May/2015)
- 2014 2015: Supervision of a senior student A. Klishin (MIT)
- 2014 2019: Supervision of 3 undergraduate, then MSc students (Moscow State University)
- 2019 now: Supervision of 2 PhD students (Moscow State University)
- **2016 now**: Supervision of 6 undegraduate (2 are now MSc) students (Moscow State University)