

Research Interests:

- Dwarf Galaxies: chemical evolution, star formation histories, structural properties of nearby Milky Way companions. Search for new Local Group galaxies.
- Search for and study of Planetary Nebulae in Nearby Galaxies.
- Galaxies with intense current bursts of star formation (HII galaxies). Search for and study of extremely metal-poor galaxies.
- Properties and evolution of Low Surface Brightness Galaxies.
- Information technology in astronomy.

Publications: (see attached publications list)

In total, I have **93** publications: **43** articles are published or accepted in international peer-reviewed journals and **49** are published as non-refereed contributions. And **1** additional paper have been submitted.

Media Coverage of Research Work:

- Press release by the Sloan Digital Sky Survey (August 18, 2003): "New Metal-poor Galaxies: The Youngest in the Universe?" (<http://www.sdss.org/news/releases/>) and by MPIA (<http://www.mpia-hd.mpg.de/SDSS>).
- Press release by the Sloan Digital Sky Survey (January 5, 2004): "COULD GALACTIC FIND BE ANDROMEDA'S FOOD? SLOAN DIGITAL SKY SURVEY REVEALS GIANT CLUMP OF STARS NEAR THE ANDROMEDA GALAXY" (<http://www.sdss.org/news/releases/20040105.andromeda.html>)
- Press release by the Sloan Digital Sky Survey (May 31, 2004): "Andromeda 9 – The Faintest Galaxy Ever, Sloan Digital Sky Survey Discovers the Lowest Luminosity Galaxy Yet: Andromeda IX, a New Satellite of M31" (<http://www.sdss.org/news/releases/20040531.andromeda9.html>)

Skill Summary:

Astronomical:

- Observing: extensive experience with echelle, long-slit and photometric observations with the 6-m SAO RAS and 1-m telescopes, and good experience using KPNO 0.6m Burrell Schmidt (USA), the Calar Alto 1.5m, 2.2m and 3.5m (Spain) telescopes. Have also observed with the MMT (USA), the Roque de los Muchachos 2.5m NOT, the Loiano 1.5m (Italy), the NTT and 2.2m (La Silla, Chile) and Service Mode VLT (Paranal, Chile) telescopes
- Image processing data from photon-counters and CCD
- Spectra processing data from photon-counters and CCD: long-slit and echelle. Experienced with objective prism spectra reduction.
- Sky Surveys and Catalogs: Expert at working with Sloan Digital Sky Survey (SDSS) data – images, spectra and databases. Wrote own software to work with SDSS data in image, table and spectrum formats.
- Analysis of astronomical data:
 1. Calculation and analysis of elemental abundances from spectrophotometric data
 2. Analysis of gas kinematics on emission line long-slit spectra
 3. Automated detection of Low-Surface-Brightness sources using CCD images
 4. Matched-filter analysis of stellar density data
 5. Automated detection of extended sources and tidal streams using stellar photometry data
 6. Derivation of surface photometry parameters and analysis of surface brightness profiles using CCD images and/or stellar counts
 7. Luminosity function calculation and analysis

8. Star/galaxy classification

Observational Support:

- Extensive experience supporting the Phase2 Wide-Field Imager (WFI) mounted at the Cassegrain focus of the 2.2-m MPG/ESO telescope at La Silla. Deep knowledge of all procedures for ESO Phase2 Service Mode Observations support. Very good knowledge of P2PP and OT ESO software.

Computing:

- Expert in the standard astronomical reduction system MIDAS and most MIDAS packages. Good familiarity with IRAF.
- Expert UNIX user, with extensive experience as a system administrator for the following UNIX systems: Linux, Ultrix, Sun OS, ISC UNIX, Xenix.
- Have worked with Convex OS, Cray OS, Windows 2000/98/95/3.x and MS-DOS.
- Programming: FORTRAN, C, MCL (MIDAS Command Language), awk, sh, perl, tcl, tk, html
- Experienced in designing data processing pipelines, creating software for acquisition and reduction systems under UNIX.
- Knowledge of \LaTeX and \PDF\LaTeX .

Grants & Fellowships:

- 1998 — 2001: Team Leader of INTAS Grant 97-0033.
- 1993 — 1995: Recipient of Outstanding Russian Young Scientist Fellowship from the Russian Government.

Students Advised / Co-Advised:

- Galai, Oleg V. (M.Sc., 2001: “MMT Spectrophotometry of BCGs”)
- Pramskij, Alexander G. (M.Sc., 1998: “The Morphology and Structural Parameters of a Subsample of BCGs from the First and Second Byurakan Survey”)
- Korablina, Natali B. (M.Sc., 1996: “Star-formation Rate of BCGs with $H\alpha$ photometry”)
- Isaenko, Vasili N (M.Sc., 1995: “Narrow-band $H\alpha$ photometry of Blue Compact Galaxies with the 6-m telescope”)

Invited Talks / Lectures:

- ”Extremely low metallicity Galaxies” (<http://www-sdss.fnal.gov/sdssdp/confer/cocoagen.html>), SDSS collaboration meeting, Fermilab, Chicago, USA, October 2–4, 2003
- ”LSB galaxies in the SDSS: First results” (<http://www.mpia.de/SDSS/meeting/agenda.txt>), SDSS collaboration meeting, MPIA, Heidelberg, Germany, March 21–23, 2002
- ”MIDAS as a standard reduction system in astronomy” (http://precise.sao.ru/Laboratory/Publications/2000_pub.html), Lectures for students of Moscow and S.-Petersburg Universities, 1999–2000

Seminars and Colloquia :

- Basel University, Basel, Switzerland
- Astrophysikalisches Institut, Potsdam, Germany
- Bologna University, Italy

- Hamburg Observatory, Germany
- Instituto de Astrofísica de Andalucía, Spain
- Kitt Peak National Observatory, Tucson, USA
- Max-Planck-Institut für Astronomie, Heidelberg, Germany
- Special Astrophysical Observatory of Russian Academy of Science, Russia
- Rostov-on-Don University, Russia

Scientific Organizing Committees:

- a. *The Chemical Evolution of Dwarf Galaxies – Present Status and Perspectives* (<http://www.mpia-hd.mpg.de/grebel/Ringchem/>), SOC member, Ringberg Workshop, July 28 – August 02, 2002, Tegernsee, Germany
- b. *SDSS Collaboration Meeting*, LOC member, March 21 – 23, 2002, Heidelberg, Germany

Other Committees and Professional Service:

- 2000 – 2003: Member of the Scientific Advisory Council at the Special Astrophysical Observatory of the Russian Academy of Science.
- Referee for the Bulletin of the Special Astrophysical Observatory of the Russian Academy of Science.

Professional Societies:

- American Astronomical Society

Details of Work Experience:

1. October 2004 — Present: In this position I am working as USG supporting astronomer for the Service Mode Observations with the WFI (Wide-Field Imager) and FEROS (Fibre-fed, Extended Range, Echelle Spectrograph) are now permanently mounted at the 2.2-m MPG/ESO telescope at La Silla. For both instruments I support both ESO and MPG (Max-Planck Society) time. My current duties are: (1) Phase1 support, mostly dealing with the questions on instruments, observing strategies, ESO policies, etc. that users may have; (2) Phase2 support, i.e. review and optimisation of Phase 2 material. The purpose is to ensure that all the information submitted by the users for the execution of their programmes is compliant with the principles of Service Mode observing and with the Service Mode policies and guidelines, and that the observing strategy is both efficient and adequate for the scientific goals; (3) Support to users during the observing semester if a problem in the execution of their programmes has been detected; (4) Authorise target change or program modification requests. As USG supporting astronomer I have duty trips to La Silla to know observing techniques, operations and procedures for both instruments.
2. July 2001 — September 2004: In this position I was a member of the SDSS Group at MPIA (MPIA is an associate partner in the SDSS collaboration) and was involved in a number of projects connected with the Sloan Digital Sky Survey data: (a). The creation of a complete sample of Low Surface Brightness Galaxies from SDSS images; (b). The creation of a catalog of Strong Emission Line Galaxies (ELGs) from SDSS spectra; (c). A search for new extremely low-metallicity galaxies from the Sloan Digital Sky Survey; and (d). A search for tidal tails around known Local Group members and for new low surface brightness members of the Local Group. The other half of my time in this position I worked as USG supporting astronomer for the Service Mode Observations with the WFI (Wide-Field Imager) of the 2.2-m MPG/ESO telescope at La Silla. Each year I had two ESO Phase2 deadlines and three MPG Phase2 deadlines.
3. 2000 — June 2001: In this position I was mainly involved in projects of detailed photometric and spectrophotometric studies of extremely metal-poor and candidate young dwarf galaxies. We started a new project (HSS-LM; Hamburg/SAO Survey for Low Metallicity) devoted to the search for extremely metal-deficient blue compact/HII-galaxies (BCGs) and to the creation of a well selected large BCG sample with strong emission lines in areas of the sky not covered by previous searches.

4. 1996 — 2000: My duties in this position were focused on NICE-system supporting and development. I also was involved in the development of acquisition systems for remote observations with the 6m telescope. I continued my research work on the KISS and Hamburg/SAO Survey projects. I created MIDAS software for KISS-data reduction, which included astrometry, object detection and classification and photometry for direct images, direct-to-spectral image transformation, objective spectrum extraction, and emission line detection. I was involved in the creation of databases to work with the candidates we found and for the statistical analysis of galaxy samples. One of the main goals for these projects was to search for extremely metal-poor and truly young dwarf galaxies and study their photometric and spectrophotometric properties in more detail. During these years we obtained spectra of ~ 1500 candidates from the Hamburg/SAO Survey and found five such galaxies. In addition, I was involved in a project of doing surface photometry for about two hundred galaxies from the Second Byurakan Survey.
5. 1998 April — May, IAA (Spain), visiting scientist. Observations and reduction of spectrophotometric and photometric data for international project the Hamburg/SAO Survey for Emission-Line Galaxies.
6. 1996 October — December, Potsdam Astrophysical Institute (Germany), visiting scientist. Worked with data from KISS project. Participated in the creation of software for data reduction from the ISOPHOT Serendipity Sky Survey. Installed MIDAS on a Cray computer.
7. 1996 April — July, NOAO (USA), visiting scientist. Observations and reduction of data for the KPNO International Spectroscopic Survey (KISS). Spectrophotometric and photometric study of very metal-deficient Blue Compact Galaxies.
8. 1995 April — June, NOAO (USA), visiting scientist. Observations and reduction of data for KISS. Participated in photometric observations and reduction of data for the sample of Blue Compact Galaxies from the Case Survey and the Second Byurakan Survey.
9. 1994 October — December, Potsdam Astrophysical Institute (Germany), visiting scientist. Wrote additional software for KISS survey data reduction and reduced some data for this project. Installed MIDAS on a Convex computer.
10. 1994 March — May, NOAO (USA), visiting scientist. Participated in observations and data reduction for KISS. Created some software for KISS data reduction.
11. 1993 — 1996: The position etiled the implementation of the concept for the 6-m telescope of SAO RAS that observations, primary data reduction and data archiving is a single, unique process and therefore must exist in the same environment – UNIX – and should use standard astronomical software. This concept was developed by our team and was implemented at the 6-m telescope during this time. With my direct and active involvement the two packages for observations with the 6-m telescope were created: **(i)** – a package for data acquisition by the spectrophotometric instrument at the Nasmyth-1 focus of the 6-m telescope (IPCS plus electrophotometer); **(ii)** – the MIDAS package (called NICE – New Interactive CCD Environment) which is intended to work with any type of CCD (during 1996–2000 80% of acquisition systems for the 6-m and 1-m telescopes of SAO RAS worked within NICE environment; <http://precise.sao.ru/pram-sky/NICE/NICE.html>). In this period I also created two packages with MIDAS for spectroscopic data reduction: **(i)** – reduction of low order echelle spectra; **(ii)** – reduction of IPCS data. I also participated in new KISS and Hamburg/SAO Survey projects and continued research on the sample of Blue Compact Galaxies from the Second Byurakan Survey. Beta-teste for MIDAS under Linux.
12. 1989 — 1993: This position was primarily to perform research work for the creation of the sample of Blue Compact Galaxies from the Second Byurakan Survey. This involved spectrophotometric observations with IPCS and reduction of data for about 400 candidates selected from the photoplates of the Second Byurakan Survey. Some part of my work involved the porting of the standard reduction system for IPCS-data (SIPRAN programming language) onto PC with DOS. Most peculiar Blue Compact Galaxies were observed with the "Zebra" echelle spectrometer on the 6m telescope, with a two-dimensional photon-counter detector. A large part of my work during this period was devoted to the first installation of standard astrophysical software (MIDAS, supported by the European Southern Observatory) on the PC under ISC UNIX and Xenix systems. This was the first time such an installation was achieved, although it is now done routinely.

Participation in Research Projects:

Since 1990 I have been involved in 3 international research projects and in 4 research projects sponsored by different Russian public agencies:

- INTAS grant 97-0033: "Massive star populations in extremely metal-deficient galaxies and their interaction with the interstellar medium"
- INTAS grant 96-0500: "Hamburg-SAO survey of emission line galaxies"
- INTAS grant 94-2285: "Physics and Evolution of Blue Compact Dwarf Galaxies"
- Federal program "Astronomy" of Russian Academy of Science: 2000–2003
- RFBR grant 97-02-16755: "Search for and study of the youngest galaxies"
- RFBR grant 96-02-16398: "New sample of emission-line galaxies for cosmological studies"
- 1993–1995: Grant from COSMION Russian research and educational center for cosmoparticle physics "Cosmological Studies with a New Complete Sample of Blue Compact Galaxies"