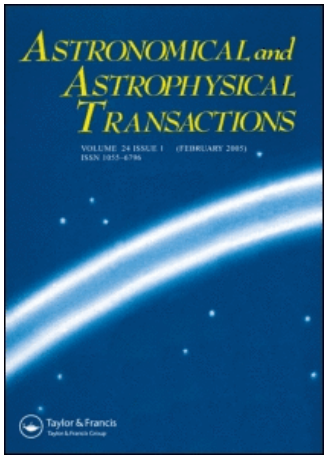

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CONFERENCES ON THE PHYSICS OF SPACE AND INTAS SUPPORT

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Information on the 31st Winter Scientific Student Astronomical Conference on the Physics of Space is presented. It was held from 28 January to 1 February 2002. Winter Scientific Student Astronomical Conferences on the Physics of Space are held annually. The last two conferences were supported by INTAS. This support has is extremely valuable for the promotion of scientific cooperation between the scientists and students of the former Soviet Union and scientists of INTAS member states.

Keywords: Conferences; International cooperation; INTAS

1 GENERAL INFORMATION

The 31st Winter Scientific Student Astronomical Conference on the Physics of Space was held from 28 January to 1 February 2002. 150 persons came to Kourovka in order to take part in the conference activities personally. 120 of these were full-time participants. This list includes 62 students and PhD students, 58 faculty members and scientific researchers from eight universities, two pedagogical universities, ten scientific organizations of the Russian Academy of Sciences, two scientific organizations of the Ukranian Academy of Sciences, organizations of the four autonomous republics of the Russian Federation (Tatarstan, Karachaevo-Cherkesia, Kalmykia and Kabardino-Balkaria) and one autonomous republic of Ukraine (Crimea). Talks were given by scientists including the following: A. A. Muellaeri from the University of Turku, Finland, E. Grebel from the Max-Planck Institute for Astronomy (MPIA), Germany, L. E. B. Johansson and V. Minier from Onsala Space Observatory, Sweden, K. A. Bogatyrev, A. V. Sergeev, T. P. Sergeeva, V. K. Taradii, N. V. Karpov from the International Center for Astronomical, Medical and Ecological Research, Ukraine, N. S. Chernykh from the Crimean Astrophysical Observatory, Ukraine, P. D. Godfrey and D. M. Cragg from Monash University, Australia, S. P. Ellingsen from the University of Tasmania, Australia and E. C. Sutton and W. D. Watson from the University of Illinois, USA. The representatives of universities and scientific institutions from 13 cities of Russia (Moscow, St Petersburg, Ekaterinburg, Volgograd, Kazan, Chelyabinsk, Tomsk, Vologda, Nizhny Novgorod, Rostov-on-Don, Snezhinsk, Elista and

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Nizhny Arkhyz) and two places in Ukraine (Nauchny and Terskol) personally participated in the conference. Participants of the conference resided in a camp site 'Chusovaya' and the Astronomical Observatory of the Ural State University in Kourovka, where the scientific sessions and all activities of the conference were held. At the opening ceremony the participants of the conference were greeted by the chairmen of who is the Head of the Astronomy Council of the Ministry of Education of the Russian Federation and Professor of St Petersburg University, K. V. Kholshevnikov, by the rector of the Ural University and a member of the Russian Academy of Sciences V. E. Tretyakov, and by the director of the Kourovka Astronomical Observatory, P. E. Zakharova. At the conference, 18 review talks, nine scientific talks from faculty members, ten scientific talks by PhD students, 23 oral student reports and 23 posters were given. The scientific programme of the conference, the texts of review lectures and abstracts of the talks were published in the book entitled Physics of Space. Proceedings of the 31st Student Scientific Conference. The participants of the conference heard reviews and scientific talks from one academician, 11 professors and 26 senior researchers. The scientific programme of the 31st Student Scientific Conference on the Physics of Space dealt with a very wide variety of astronomical problems connected with the discoveries of extrasolar planets, the formation of stars, the physical conditions in the solar corona, the final stages of stellar evolution, the search for black holes, the evolution of stellar systems, the chemical evolution of the Galaxy, and enrichment of intergalactic medium with heavy elements. It is very important to mention the high pedagogical level of the conference and its great influence on the increase in the quality of teaching of the young specialists. The conference was highly organized. The summary of the conference was delivered by the director of the Astronomical Observatory of the Ural State University, P. E. Zakharova, at the closing ceremony of the conference. She acknowledged support for the conference by the Russian Foundation for Basic Research, the Federal Purpose Programme 'Integration' and marked support from INTAS which provides hope for widening the geographical participation in the conference. The chairman and Professor of St Petersburg University, K. V. Kholshevnikov, summarized the results of the competition between the student reports. Results of the astronomical olympiad were delivered by the chairman of the programme committee who is a senior lecturer at Ural University, N. B. Frolova. The participants of the conference expressed deep gratitude to the organizing committee for excellent preparation and for holding many student scientific astronomical conferences at the Astronomical Observatory of Ural University.

2 SCIENTIFIC PROGRAMME

2.1 Plenary Sessions: Review Talks

In the reviews, the problems, current status and prospects of research were considered. The survey by Zinchenko was devoted to the analysis of results of observations of regions of star formation in the Galaxy (infrared sources, ultracompact H II regions and masers) carried out by the researchers of the Institute for Applied Physics of the Russian Academy of Sciences together with the foreign colleagues both in the northern and in the southern hemispheres. Sources of maser emission in regions of star formation were reviewed in the lecture by Sobolev. It was shown that the sizes of maser formation regions are much greater than was considered earlier. Sources of turbulence in the interstellar medium (cosmic rays, supernova explosions, stellar winds and jets, and differential rotation of the Galaxy) were discussed in the lecture by Zamozdra. The modern theoretical scenario of evolution of massive double stars was illustrated with the observational data by Fabrika, and special atten-

tion is given to double system SS 433 and the possibility of detecting similar objects in other galaxies. Prokhorov allocated on the celestial sphere some areas of possible localization of single black holes formed as a result of disintegration of double stars in star associations after explosion of a massive component, accompanied by the appearance of an envelope and spread of pair components. Supersoft X-ray sources were considered in the lecture by Suleimanov. The observation of fluctuatians of solar corona loops performed on a space satellite TRACE were analysed in the report by Soloviev. He showed that the fast damping of fluctuations could be connected with excitation and propagation of fast magnetosound waves. Issue of the catalogue HIPPARCOS, containing information about parallaxes and proper motions for more than 100,000 stars stimulated studies on revealing moving groups of stars. The new methods developed for the solution of this task were discussed in the lecture by Orlov. The evolution of chemical abundances in galaxies was considered by Shustov. The radial gradient of the abundances of heavy elements in disc galaxies can persist in the case when the peripheral parts of a disc spread the substance into the intergalactic medium much more intensively than internal parts. The problem of enrichment of the intergalactic medium by heavy elements was reviewed in the lecture by Schekinov. The analysis of 80 extrasolar planetary systems was given by Kholshevnikov. All extrasolar planets have masses approximately equal to the Jovian mass. The increase in observational accuracy and implication of new methods probably will allow us to find planetary systems with structures similar to the Solar System. The evolution of an orbit of a planet of small mass in gravitational field of a star and massive planet on eccentric orbit was considered in the report by Sokolov. The results of observation of minor planets of the Solar System for 200 years was given by Chernykh. In the lecture by Rykhlova the problem of contamination of the circumterrestrial medium by man-made objects was considered. Prospects of optically monitoring near space at the International Observatory on Mount Terskol were analysed by Sergeev.

2.2 Plenary Sessions: Competition of Student Reports

Student scientific reports covered almost all fields of astronomy. 23 students took part in the competition for student scientific reports. The jury for this competition selected ten reports which were awarded a diploma. Three diplomas of the first degree were given to Shapiro for the study ‘Formation of lines in purely scattering optically thick atmospheres’, Vasyunin and Geibuch for the study ‘High spectral resolution observations with RT-22 radiotelescope of Puschino Radio Observatory of the Lebedev Physical Institute’ and Fioktistova for the study ‘Spectral and photometric studies of cataclysmic variable WZ Sge in a period of flash activity’ Four diplomas of the second degree were given to: Ignatiev for the study ‘Broad-band and gravitational wave impulses from binary neutron stars on eccentric orbits’, Shakhvorostova for the study ‘Polarization of the microwave background by scattering on flat proto-objects’, Zhuchkov for the study ‘Synthetic spectra of supersoft X-ray sources’ and Nedugova for the study ‘Modelling of shock waves in axisymmetric accretion discs by the Smooth Particle Hydrodynamics (SPH) method’. Three diplomas of the third degree were awarded to Bryushinin for the study ‘On the properties of least-squares estimates of the initial parameters of orbits of minor bodies’, Podorvanyuk for the study ‘Kinematics of neutral gas in the irregular dwarf galaxy IC 1613’ and Kuzmin for the study ‘Influence of dynamic cooling by radiation on instability modes for jets from young stars’.

2.3 Problem Seminars: Talks by PhD Students

As well as the plenary sessions at the conference, three problem seminars were arranged: ‘Physics of interstellar matter’, ‘Astrophysics’, ‘Celestial mechanics’ and the poster

session. Talks at the problem seminars were mostly presented by PhD students and young scientists. In the conference, PhD students from the State Universities of Moscow, Saint Petersburg, Tomsk, Vologda and Ekaterinburg, the Institute for Astronomy and the Astro-Space Center of the Lebedev Physical Institute of Academy of Sciences took part. They presented the results of their studies in the friendly although critical atmosphere of problem seminars. The results of studies by PhD students were evaluated and commented on by leading scientists. It is worth noting that the talks at problem seminars presented different aspects of the solution of specific problems: observational (e.g. M. A. Voronkov), theoretical (e.g. S. A. Orlov), statistical (e.g. G. N. Dremova), numerical (e.g. Ya. N. Pavlyuchenkov), computational (P. V. Kaigorodov) and mixed. Various cooperations between young and senior scientists were planned at the conference.

2.4 Poster Session

25 posters were presented mainly by students and younger scientists. They were devoted to reports on the solution of specific tasks. For the students it was good to develop their writing skills and, indeed, some of the student posters (e.g. E. S. Maslennikova, 'Television observations of the Perseid meteor shower') were close to the high standards of scientific papers. Several posters were presented by students in their first years of education and they showed how beautiful astronomy is. The poster session provided scientists with the possibility of presenting additional information and establishing contacts for further studies in cooperation with students and representatives of other institutions. This is important since the number of talks by scientists was greatly limited and many people were busy with organizing the conference.

2.5 Olympiad

Nine students from Moscow, St Petersburg, Ural and Kazan Universities took part in astronomical olympiad. They were given four basic and one additional tasks. The tasks covered the fields of telescope construction, astrometry, physics of solar system, astrophysics and stellar astronomy. The students demonstrated a high degree of learning and good knowledge. The first prize was won by the first-year student from the St Petersburg University, A. I. Shapiro. The winners of the olympiad obtained monetary awards.

3 CULTURAL AND SPORTS EVENTS

Cultural and sports events of the 31st Student Astronomical Conference on the Physics of Space took place in the Kourovka Astronomical Observatory in the evening after supper, and sports events in the daytime before lunch and in the evening after cultural events. The events included a welcome party, a musical party devoted to Russian bards, a party of classical music arranged by the Ural State Conservatory, a farewell party and various sports events. Most of the conference participants played active roles in the events; they were performing singing, dancing, etc. Traditional wall newspapers containing numerous photographs reflected the events of the student conferences. Every participant received a photograph with an overall view of conference participants and several photographs with astronomical objects and pictures of the observatory. The 31st Student Scientific Conference on the Physics of Space was the subject of a considerable number of newspaper articles, television and radio broadcasts. A special calendar devoted to the conference was printed.

4 INTAS ACTIVITIES

Participants involved in research projects supported by INTAS widely presented their results in review lectures, oral talks, student reports and posters. The results were evaluated by the audience consistency of both senior researchers and the most active students, PhD students and young scientists. Many discussions were initiated and new contacts established. The results of INTAS Project 99-1667 were reported by the students of Ural State University, A. I. Vasyunin and A. L. Geibuch, who won the first prize in the competition of student reports. Students of the Ural State University, T. S. Zobacheva and A. M. Akhmadinurova, delivered results obtained within framework of INTAS Project 97-11451. The PhD students M. A. Voronkov (Moscow) and A. V. Malyshev (Ekaterinburg) presented talks devoted to observational studies within the framework of INTAS Project 97-11451. INTAS team leaders Yu. A. Schekinov, A. M. Sobolev, I. I. Zinchenko and their collaborators delivered review talks and presented posters devoted to the studies on INTAS projects. INTAS support was acknowledged in the abstracts of the conference papers. The chairmen of the problem seminars drew special attention to INTAS support for young scientists. The INTAS day was held on Friday, 1 February 2002. This meeting was included in the tight programme of the conference because many people were greatly interested in INTAS activities. There was a poster on the topic which attracted much interest. Personal communications of INTAS grant holders and organizers of INTAS support to the conference were found very useful. 11 conference participants were involved in five ongoing and recent INTAS projects. All of these greatly acknowledged INTAS support. It was marked that INTAS support was extremely valuable for the promotion of scientific cooperation between the scientists and students of the former Soviet Union and scientists of INTAS member states. One of the most efficient ways in doing this is by widening of geographical participation in the conference with INTAS support in future. All the meeting participants expressed their gratitude to INTAS and expressed hope that INTAS will continue to carry out its very important job.