This project is supported by: The NATO Science for Peace and Security Programme

NATO Advanced Study Institute

on

"Special Detection Technique (Polarimetry) and Remote Sensing"

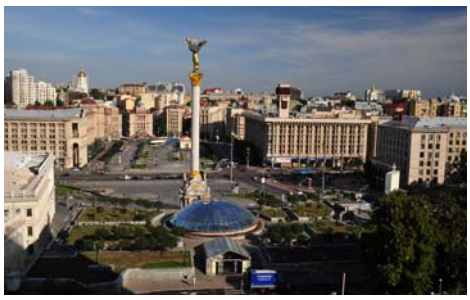
Kyiv, Ukraine

12–25 September 2010

http://www.giss.nasa.gov/staff/mmishchenko/Ukraine-2010/nato-2010.htm

Fourth announcement (06/23/2010)

Application deadline: 15 May 2010



PARTICIPATION

The number of participants is limited, and there are NATO regulations with regard to attendance; therefore all participation in this event is invitational.

FORMAT

A NATO Advanced Study Institute (ASI)[1] is a high-level teaching activity where a carefully defined science subject is treated in depth by lecturers and researchers of international standing, and which includes new advances in the subject not yet in university courses. The main purpose of a NATO ASI is to contribute to the dissemination of knowledge and the formation of international scientific contacts through formal presentations and extensive subsequent discussions.

The NATO ASI format is that of a summer school and includes a number of previously invited main lectures. The subsequently selected ASI participants include actual graduate students, postdocs, and senior researchers.

In addition to the main lectures, there will be shorter lectures, review talks, and contributed talks as well as poster sessions in which the senior scientists, postdocs, and graduate students describe their own research.

SCOPE

The goal of the meeting is to present high level tutorial courses as well as more specialized lectures and talks on the most recent advances in polarimetric detection, characterization, and remote sensing, including military and environmental monitoring as well as terrestrial, atmospheric, and astrophysical characterization. We will present, discuss, and teach techniques developed in various disciplines to acquire information from the polarization signal of scattered electromagnetic waves. We will identify techniques that have been especially successful for various applications as well as the future needs of the research communities. Most of all, it is expected that the inclusion of researchers from various disciplines will lead to cross-pollination of ideas and foster collaborations that will improve research efficiency.

CHAIRS

Yaroslav Yatskiv	*Main Astronomical Observatory, National Academy of Sciences of Ukraine, Kyiv, Ukraine*
Michael Mishchenko	*NASA Goddard Institute for Space Studies, New York, USA*

SCIENTIFIC ORGANIZING COMMITTEE

James Hough	*University of Hertfordshire, Hatfield, UK*
Hal Maring	*NASA Headquarters, Washington, DC, USA*
M. Pinar Mengüç	*University of Kentucky, Lexington, KY, USA; Ozyegin University, Istanbul, Turkey*
Vera Rosenbush	*Main Astronomical Observatory, National Academy of Sciences of Ukraine, Kyiv, Ukraine*
Gorden Videen	*US Army Research Laboratory, Adelphi, MD, USA*

MAIN LECTURES

Stellar spectropolarimetry: basic principles, observing and data reduction techniques, and diagnostic of magnetic fields (S. Bagnulo, *Armagh Observatory, Armagh, UK*)

Inversion methods for atmospheric remote sensing (A. Doicu, *Remote Sensing Technology Institute, Germany*)

Optimization of inversion in algorithms for retrieval of aerosol properties from polarimetric remote sensing (O. Dubovik, *University of Lille, France*)

[1] Click on the hyperlink to obtain further information.

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High sensitivity photopolarimetry: techniques and applications (J. Hough, *University of Hertfordshire, UK*)

Nanoparticle plasmonics (N. G. Khlebtsov, *Institute of Biochemistry and Physiology of Plants and Microorganisms, Russian Academy of Sciences, Russia*)

Ultra-high spectroscopic remote sensing: a microscope on planetary atmospheres (T. Kostiuk, *NASA Goddard Space Flight Center, USA*)

Inferring properties of dust through observations and simulations of the linear polarization of scattered light (A.-C. Levasseur-Regourd, *University of Paris, France*)

A typical NASA space mission: science, engineering, politics and all that (H. Maring, *NASA HQ, Washington, DC, USA*)

Enhancement of absorption and scattering with near-field effects (M. P. Mengüç, *University of Kentucky, USA; Ozyegin University, Turkey*)

Electromagnetic scattering, radiative transfer, and coherent backscattering (M. I. Mishchenko, *NASA Goddard Institute for Space Studies, USA*)

Electromagnetic scattering by particles on substrates: from the micro to the nanometer scale (F. Moreno, *University of Cantabria, Spain*)

Coherent backscattering in planetary regoliths (K. Muinonen, *University of Helsinki, Finland*)

Photometric and polarimetric remote sensing of the Moon (Yu. G. Shkuratov, *Kharkiv National University, Ukraine*)

Environmental sensing of aerosols (G. Videen, *Army Research Laboratory, USA*)

Non-spherical and composite particles: how to simplify light scattering calculations (N. V. Voshchinnikov, *St. Petersburg University, Russia*)

Polarimetric research activities at the Main Astronomical Observatory of NAS of Ukraine (Ya. S. Yatskiv, *Main Astronomical Observatory, National Academy of Sciences, Ukraine*)

LOCAL ORGANIZING COMMITTEE

Vera Rosenbush, *Chairperson*
E-mail: rosevera@mao.kiev.ua; rosevera@list.ru
Tel: +380 (44) 526 3784

Irina Kulyk, *Vice-chaiperson*
E-mail: leda@mao.kiev.ua
Tel: +380 (44) 526 4769

Alexandra Ivanova, *Secretary*
E-mail: sandra@mao.kiev.ua
Tel: +380 (44) 526 4769

LOCAL CONTACT ADDRESS

NATO ASI-2010
Main Astronomical Observatory
National Academy of Sciences of Ukraine
Zabolotnoho Str. 27
Kyiv 03680
UKRAINE

Fax: +380 (44) 526 2147
Tel: +380 (44) 526 0869
E-mail: rosevera@list.ru; rosevera@mao.kiev.ua

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REGISTRATION AND ACCOMMODATION FEES

There is no formal registration fee. There will be a board & lodging fee depending on the type of accommodation required. Limited funds are available to reduce or waive this fee as well as to provide lowest-cost transportation for selected residents of (especially) NATO Partner and Mediterranean Dialogue countries. We strongly encourage participants to pursue other means of support, for instance, Americans through the National Science Foundation (NSF).

APPLICATION PROCEDURE

All sponsored participants come from NATO countries[2] or Partner countries (eligible and non-eligible)[3] or Mediterranean Dialogue countries,[4] with the limit for any one country of 25% of the total number of participants. Also, participants employed by industrial or commercial undertakings are not eligible to receive NATO funds.

To be invited, potential participants were asked to submit a no-more-than-one-page abstract using one of the following templates:

For Word users: k2003.doc
For Latex users: k2003.tex

Please do not modify the characteristics of these templates (fonts, margins, spacing, etc.)! LATEX users please submit source code (latex file) and the compiled postscript or .pdf files.

In addition, applicants needed to fill out and submit the application form. If you have asked for funds, please be aware that these are limited, and that NATO requires a certain percentage of attendees be from partner countries who typically have extreme limitations on their funding. If you are from a NATO member country, support is ***extremely*** limited. NATO also requires that supported travel be by the cheapest means possible and we will need copies of receipts, so try to be realistic (train fares, for instance, are posted on the internet).

Finally, please email (1) abstract, (2) a CV (no more than 2 pages), and (3) completed application form **as attachments** to each of the following three individuals:

Vera Rosenbush at rosevera@list.ru; rosevera@mao.kiev.ua
Gorden Videen at gorden.videen@us.army.mil
Michael Mishchenko at mmishchenko@giss.nasa.gov

The application deadline was 15 May 2010.

LOCATION, VENUE, AND TRANSPORTATION

The bulk of the NATO ASI is scheduled to take place in the resort "Koncha-Zaspa" located in the "green zone" of Kyiv within easy reach of the city center. Transportation from and to Kyiv (including the Boryspil International Airport and the Kyiv Passenger Railway Station) will be provided upon advance request (please contact the Local Organizing Committee). The Boryspil Airport and the Railway Station provide an easy access to Kyiv from essentially anywhere in the world.

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[2] *NATO countries:* Albania, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Turkey, United Kingdom, and United States.

[3] *Partner countries:* Armenia, Austria, Azerbaijan, Belarus, Bosnia and Herzegovina, Finland, Georgia, Ireland, Kazakhstan, Kyrghyz Republic, the former Yugoslav Republic of Macedonia (Turkey recognises the Republic of Macedonia with its constitutional name), Malta, The Republic of Moldova, Montenegro, Russia, Serbia, Sweden, Switzerland, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

[4] *Mediterranean Dialogue countries:* Algeria, Egypt, Israel, Jordan, Mauritania, Morocco, and Tunisia.

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It is our intention that all attendees stay at the same resort to facilitate scientific interactions. The accommodation of all conference participants at “Koncha-Zaspa” will be for the nights of 12–24 September 2010 and will be managed by the Local Organizing Committee. The total “lodging + full-board” costs range from approximately $35 to $125 per person per night depending on the type of room (please see the application form for detailed pricing). A number of grants are available to cover the accommodation costs partially or fully. Those in need of financial assistance should indicate so on the application form. The accommodation cost per each additional night is also $35 – $125 per person per night depending on the type of room.

The lake Koncha is likely to be sufficiently warm in September to satisfy devoted swimmers. The resort also has an indoor pool and a fitness center which can be used for a reasonable fee.

Limited logistical assistance will be provided upon request to those preferring to stay in one of the Kyiv downtown hotels. Please contact the Local Organizing Committee as soon as possible. Please note that daily commute to the conference site can be tiring.

SOCIAL PROGRAM

The social program of the ASI will be free of charge and is yet to be finalized. It will surely include an informal opening reception, a conference dinner, a visit to the Main Astronomical Observatory, and probably one or two sightseeing tours of Kyiv and the Dnipro River.

In addition, the Local Organizing Committee can provide logistical assistance with arranging individual or small-group visits to other Kyiv attractions, including famous Kyiv theaters. Please contact the LOC as soon as possible because, for example, theater tickets must be purchased well in advance.

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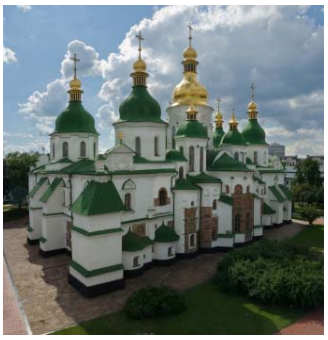

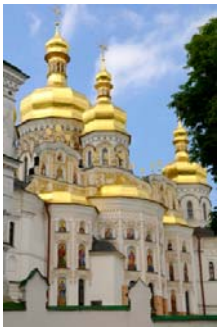

VISAS, CUSTOMS, AND INSURACE

Ukraine has adopted a visa-free regime for citizens of many countries, including EU countries, Canada, Japan, Switzerland, and the US. Otherwise the visa situation can be fluid. For updated specific information, please contact your nearest Ukrainian Embassy or Consulate. We are happy to provide letters of invitation if required. This must be done several months before the NATO ASI is set to take place, since visa applications can take quite some time.

Ukrainian customs regulations are rather mild, but must be strictly followed.

The lecturers and other prospective participants are advised that NATO does not take out any health or accident insurance for their participation in the ASI.

PUBLICATIONS

The main and shorter lectures of the meeting will be published as a monograph by Springer in the NATO Science Series. In addition, we will be soliciting high quality, full-size papers for a feature issue to be published in the Journal of Quantitative Spectroscopy and Radiative Transfer (*JQSRT*). *JQSRT* has no paper length limit and page charges. All papers will be subject to rigorous peer review and will be treated with the same scientific scrutiny as any manuscripts submitted to *JQSRT*. Furthermore, all format instructions specific to this journal apply.

JQSRT YOUNG SCIENTIST AWARD

It is expected that at the ASI, a *JQSRT* prize for the best young scientist (Euro 500) will be awarded in the category of electromagnetic scattering and remote sensing. The selection criteria will include an age limitation (35 or younger) and at least one first-authored paper published in *JQSRT*. The Award Committee will consist of the main lecturers and members of the Scientific Organizing Committee.

SPONSORSHIP

We acknowledge their generous support:

National Science Foundation
WHERE DISCOVERIES BEGIN

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Contributed presentations

Davis A. B., *et al., Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA*: A new polarization-based approach to the characterization of aerosols very near broken or isolated cumulus-type clouds.

Goloub P., *Universite de Lille 1, France*: The future of ground-based aerosol remote sensing with multiwavelength Cimel sun/sky polarimeter – evolution and implementation of PHOTONS sun-photometer network.

Gurton K. P., *et al., U.S. Army Research Laboratory, Adelphi, USA*: Polarimetric imaging in the thermal infrared: methods and analysis.

Kiselev N. N., *Main Astronomical Observatory of the National Academy of Sciences of Ukraine, Kyiv, Ukraine*: Astrophysical polarimetric investigations in Ukraine.

Lazarian, A., *University of Wisconsin–Madison, USA*: Polarization from aligned grains: from atmosphere to astrophysics.

Pokrovsky O., Pokrovsky I., and Roujean J.-L., *Voeikov Main Geophysical Observatory, St. Petersburg, Russia*: Land surface albedo estimation from the SEVIRI/MSG observing system in using POLDER BRDF measurements.

Ruhtz, T., *et al., Freie Universität Berlin, Insitute for Space Sciences, Berlin, Germany*: The Airborne Multi-Spectral Sunphoto- & Polarimeter (AMSSP) and the Universal Radiation Measurement System (URMS).

Shchukina N. G., *Main Astronomical Observatory of the National Academy of Sciences, Kyiv, Ukraine*: Stokes diagnostics of small-scale magnetic fields in the quiet Sun.

Andronov I. L., Kolesnikov S. V., and Shakhovskoy N. M., *Odessa National Maritime University, Odessa, Ukraine*: Photo-polarimetry of cataclysmic variables.

Bagnulo S., *Armagh Observatory, Armagh, UK*: Polarimetry of small bodies of the solar system with large telescopes.

Berg M. J., *et al., US Army Research Laboratory, Adelphi, MD, USA*; *and Department of Physics and Astronomy, Mississippi State University, Mississippi State, MS, USA*: Reflection symmetry of a sphere's internal field and its consequences on scattering: behavior of the Stokes parameters.

Borovoi A., *et al., Institute of Atmospheric Optics, Russia*: Light scattering by large faceted particles in the physical-optics approximation.

Chaikovskaya L. I., *Institute of Physics, Belarus*: Analytical solutions to model polarized signals in problems of media sounding with full account for multiple scattering.

Chowdhary J., *Columbia University, New York, USA*: Multiangle, multispectral variations of polarized radiances emerging from open oceans.

Churyumov K. I., *Astronomical observatory of Kyiv National Shevchenko University, Kyiv, Ukraine*: Discovery, observations and some results of exploration of comet 67P/Churyumov–Gerasimenko – the main target of the "Rosetta" space mission.

Hadamcik E., *et al., UPMC University, France*: Polarization of light scattered by clouds and layers of solid particles by an imaging technique.

Kokhanovsky A. A., *et al., Bremen University, Germany*: A new era of global atmospheric chemistry: sounding the troposphere from space.

Kolokolova L., *University of Maryland, College Park, MD, USA*: Remote sensing of aggregates in cosmic dust with linear and circular polarization.

Petrova E., *et al., Space Research Institute, RAS, Moscow, Russia*: Light scattering in densely packed and sparse media and the backscattering phenomena.

Ponyavina A. N., and Kachan S. M, *Institute of Physics, Minsk, Belarus*: Plasmonic spectroscopy of densely packed metallic nanostructures.

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Rosenbush V. K., *Main Astronomical Observatory of the National Academy of Sciences of Ukraine, Kyiv, Ukraine*: Opposition optical effects in planetary astrophysics: observational results.

Yan H., and Lazarian A., *Peking University, Kavli Institute of Astronomy and Astrophysics, Beijing, China*: Ground-state alignment of atoms and ions: new diagnostics of astrophysical magnetic field.

Yanovsky F., *National Aviation University, Kyiv, Ukraine*: Doppler-polarimetric radar remote sensing.

Yurkin M. A., *et al., Institute of Chemical Kinetics and Combustion, SB RAS, Russia*: Accuracy of the discrete dipole approximation for gold nanoparticles.

Albella P., R. Alcaraz de la Osa, González F., Saiz J. M., and Moreno F., *University of Cantabria, Santander, Spain*: Metal nanoshells characterization by means of the linear polarization degree at right angle scattering configuration.

Alexandrov M. D., *et al., Columbia University, New York, USA*: Derivation of cloud droplet size from polarized reflection measurements by the Research Scanning Polarimeter.

Andriets O. S., and Lozitsky V. G., *Kyiv National Taras Shevchenko University, Kyiv, Ukraine*: Studies of magnetic field evolution in weak solar flares using spectropolarimetric data.

Andronov I. L., *Odessa National Maritime University, Odessa, Ukraine*: Polarization and spectra of accretion columns in magnetic cataclysmic variables.

Antoniuk K., and Kiselev N., *Crimean Astrophysical Observatory, Nauchny, Crimea, Ukraine*: 554 Peraga: an asteroid with peculiar polarization properties?

Baransky O. R., Churyumov K. I., Ponomarenko V. O., Kleshchonok V. V., and Andreev M., *Kyiv National Shevchenko University, Kyiv, Ukraine*: Narrow-band photometry of comet 81P/Wild at Peak Terskol (P).

Barun V. V., and Ivanov A. P., *Institute of Physics, Belarus National Academy of Sciences, Minsk, Belarus*: Features in spectral polarization sensing of skin biotissue.

Baskov R. A., and Chumak O. O., *National University of Kyiv–Mohyla Academy, Kyiv, Ukraine*: Scintillations of laser radiation propagating in a turbulent atmosphere: the effect of bending of photon trajectories.

Bedareva T. V., *et al., V. E. Zuev Institute of Atmospheric Optics, SB RAS, Tomsk, Russia*: Computer system for retrieval of aerosol optical and microphysical properties from ground-based spectral measurements of atmospheric transparency and diffuse radiance in cloudless sky.

Belevtsev R. Ya., Churyumov K. I., Sobotovich E. V., Spivak S. D., Blagko V. I., and Solonenko V. I., *Institute of Environmental Geochemistry, Kyiv, Ukraine*: Search and investigation of cosmic substance from bright bolide EN171101 “Turyi Remety” in Zacarpathians.

Borman G. A., and Efimov Yu. S., *Crimean Astrophysical Observatory, Nauchny, Ukraine*: More than half a century of polarimetric investigations at the Crimean Astrophysical Observatory.

Bovchaliuk A., *et al., Main Astronomical Observatory of the National Academy of Sciences of Ukraine, Kyiv, Ukraine*: Comparison of PARASOL/POLDER and AERONET/PHOTONS derived aerosol properties over Kyiv and Sevastopol regions during the 2008–2010 period.

Bovchaliuk A., *et al., Main Astronomical Observatory of the National Academy of Sciences of Ukraine, Kyiv, Ukraine*: Aerosol distribution and variability over Ukraine using PARASOL/POLDER spaceborne polarimeter: preliminary analysis.

Breus V. V., *Odessa National University, Odessa, Ukraine*: Simultaneous linear and circular polarimetry processing using “PolarObs”.

Buczkowski S. L., Martins J. V., and Fernandez-Borda R., *University of Maryland Baltimore County, Baltimore, MD, USA*: Characterization of imaging polarimeters and application to retrieval of cloud droplet distribution parameters.

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Budak V. P., and Efremenko D. S., *Moscow Power Engineering Institute (Technical University), Moscow, Russia*: Implementation of vector radiative transfer equation solutions on Intel processors.

Budak V. P., and Klyuykov D. A., *Moscow Power Engineering Institute, Moscow, Russia*: Complete radiation transfer model through the coupled atmosphere-ocean system.

Chaikovskaya L. I., *et al., Institute of Physics, Belarus*: Determination of optical constants of tissues.

Chaikovskaya L.I., *et al., Institute of Physics, Belarus*: On data interpretation in polarization lidar sounding of thin cirrus clouds.

Cole B., Yang P., and Riedi J., *Department of Atmospheric Sciences, Texas A&M University, College Station, TX, USA*: Cloud properties inferred from POLDER data.

Diner D. J., Chipman R. A., *et al., Jet Propulsion Laboratory, Pasadena, CA, USA*: From MISR to MSPI: technology advances and algorithm improvements for aerosol remote sensing.

Dlugach Zh., Mishchenko M. I., and Liu L., *Main Astronomical Observatory of the National Academy of Sciences of Ukraine, Kyiv, Ukraine*: Light scattering by densely packed random particulate media.

Dolgos G., and Martins J. V., *University of Maryland, Baltimore County, Baltimore, USA*: Polarized imaging nephelometer for in situ phase matrix measurements.

Fernandez-Borda R., Martins J. V., Waluschka E., Pellicori S., Ramos-Izquierdo L., and Cieslak J. D., *Goddard Earth Science and Technology Center, University of Maryland Baltimore County, Baltimore, MD, USA*: Reducing the effect of instrumental polarization on the accuracy of generic imaging polarimeters.

Freimanis Ju., *Ventspils International Radio Astronomy Centre, Latvia*: Transfer equation in general curvilinear coordinates.

García-Cámara B., González F., and Moreno F., *Universidad de Cantabria, Santander, Spain*: Scattering of light by a dimer of nanoparticles with unconventional optical properties: from far to near field.

Gelash A. A., Yurkin M. A., and Maltsev V. P., *Institute of Chemical Kinetics and Combustion, SB RAS, Novosibirsk, Russia*: Characterization of *E. Coli* cells by the scanning flow cytometry.

Geogdzhayev I., *Columbia University, New York, USA*: An overview of the Global Aerosol Climatology Project and comparisons with MODIS and MISR.

Gilev K., *et al., Institute of Chemical Kinetics and Combustion, Novosibirsk, Russia*: Characterization of erythrocytes and platelets using pre-calculated database of light scattering patterns.

Gurton K., and Felton M., *U.S. Army Research Laboratory, Adelphi, USA*: *In situ* measurement of the polarimetric backscatter at CO_2 laser wavelengths for aerosolized bacillus subtilis endospores and associated background materials.

Hollstein A., *et al., Freie Universität Berlin, Insitute for Space Sciences, Berlin, Germany*: Introducing polarization into the matrix operator radiative transfer model MOMO.

Hu Y., *et al., NASA Langley Research Center, Hampton, VA, USA:* Analyzing optical properties of the ocean surface and ocean sub-surface with lidar and multi-angle polarimeter measurements during the Gulf of Mexico flight.

Kalashnikova O. V., *et al., Jet Propulsion Laboratory, Pasadena, CA, USA*: Investigation of the effects of realistic dust-pollution mixed scenarios on the degree of linear polarization: case studies.

Kassianov E., *Pacific Northwest National Laboratory, USA*: A new retrieval of aerosol optical depth from reflectance ratios on partly cloudy days: development and evaluation.

Kirillov A. S., *Polar Geophysical Institute of Russian Academy of Sciences, Murmansk, Russia*: Excitation and quenching of ultraviolet oxygen and nitrogen bands in the nightglow and auroral ionosphere of the Earth.

Kolesnikov S. V., Shakhovskoy N. M., Andronov I. L., Galibeyj I. V., Epihina N. V. , Kliment'eva S. V., and Zhuzhulina E. A., *Astronomical Observatory, Odessa National University, Odessa, Ukraine*: Polarimeter with a rapidly rotating retarder.

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Kolokolova L., *et al., University of Maryland, College Park, MD, USA*: Coherent backscattering effect in near-infrared spectra of icy bodies.

Kolokolova L., Mackowski D., and Sparks W., *University of Maryland, College Park, MD, USA*: Circular polarization of aggregates of optically active materials.

Kolotkov G. A., and Penin S. T., *V. E. Zuev Institute of Atmospheric Optics, SB RAS, Tomsk, Russia*: Remote monitoring method for raised and induced ionization areas in the atmosphere.

Konoshonkin A., *et al*., *Institute of Atmospheric Optics, Tomsk, Russia:* Application of the weighted residual method to the problem of light scattering by ice crystals.

Korkin S. V., Budak V. P., and Lyapustin A. I., *University of Maryland Baltimore County, GEST / NASA Goddard Space Flight Center, Greenbelt, MD, USA*: Modified vector discrete ordinates method for radiative transfer in vertically inhomogeneous atmospheres.

Kostogryz N. M., Vid'machenko A. P., and Morozhenko O. V., *Main Astronomical Observatory of NAS of Ukraine, Kyiv, Ukraine*: Polarimetric study of transiting extrasolar planets.

Kulyk I., *Main Astronomical Observatory of the National Academy of Sciences of Ukraine, Kyiv, Ukraine*: Photopolarimetry of Tethys and Dione at low phase angles: searching for similarities and differences.

Kuz'kov V., *et al., Main Astronomical Observatory of the National Academy of Sciences, Kyiv, Ukraine*: Remote sensing during laser experiments with geostationary satellite ARTEMIS ESA.

C.-Labonnote L., *University of Lille, Lille, France*: Information content analysis of multi-viewing polarized measurements for liquid cloud microphysical properties retrievals.

Lazarian, A., *University of Wisconsin–Madison, USA*: Circular polarization from aligned grains: application to comets and Zodiacal light.

Lelli L., *et al., University of Bremen, Institute of Environmental Physics, Bremen, Germany*: The errors in TOA reflectances in the O_2 A-band and O_3 absorption band from neglecting polarization in the forward modeling.

Lindqvist H., Nousiainen T., and Zubko E., *University of Helsinki, Finland*: Optical modeling of volcanic, vesicular fine-ash particles.

Litvinov P., Hasekamp O., Cairns B., and Mishchenko M., *SRON Netherlands Institute for Space Research, Utrecht, The Netherlands*: BRDF and BPDF models for Earth's surfaces in application to the problem of aerosol retrieval over land.

Litvinov P., and Hasekamp O., *SRON Netherlands Institute for Space Research, Utrecht, The Netherlands*: Unified model for total and polarized reflectances of terrestrial surfaces.

Lopatin A., Dubovik O., Chaikovsky A., and Goloub Ph., *University of Lille 1, France*: An algorithm for enhanced characterisation of atmospheric aerosols using a combination of active and passive remote observations.

Mikrenska M., *Institute of Mechanics, Bulgarian Academy of Sciences, Sofia, Bulgaria*: A computer code for light scattering simulations.

Natraj V., *et al., Jet Propulsion Laboratory, Pasadena, CA, USA*: A two orders of scattering approach to account for polarization in CO_2 retrievals from space.

Nevodovskyi P. V., Morozhenko A. V., Vid'machenko A. P., Geraimchuk M. D, Kurenyov Y. P., and Nevodovskyi E. P., *Main Astronomical Observatory of the National Academy of Sciences of Ukraine, Kyiv, Ukraine*: UV-polarimeter for research of terrestrial stratospheric aerosols.

Petrov D., Shkuratov Yu., Videen G., and Levandovskyi I., *Astronomical Institute of Kharkiv V. N. Karazin National University, Kharkiv, Ukraine*: Sh-matrices technique applied to particles of arbitrary shapes.

Ponomarenko V. O., *et al., Kyiv National Shevchenko University, Kyiv, Ukraine*: Observation and study of spectra of comet 81P/Wild – the main target of the space mission "Stardust" on 28/29 March and 2/3 April 2010.

Prokopjeva M. S., *et al., St. Petersburg University, Russia*: Dependence of the polarizing efficiency of nonspherical dust grains on their structure.

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Rudenko S. P., Maksimenko L. S., Matyash I. E., and Serdega B. K., *V. Lashkaryov Institute of Semiconductor Physics, Kyiv, Ukraine*: The polarization modulation technique for investigation of nanosized metal films.

Savenkov S., Priezzhev A., Oberemok Ye., Osovskyy S., Myllyla R., and Tornberg J., *Kyiv Taras Shevchenko University, Kyiv, Ukraine*: Mueller polarimetry of paper.

Slyusarev I. G., *et al.*, *Institute of Astronomy, Kharkiv National University, Kharkiv, Ukraine*: Relationship between polarimetric and photometric phase curves of asteroids.

Stabnikov V., and Ivanov V., *National Aviation University, Kiev, Ukraine*: Distant optical sensing of microorganisms.

Sun W., and Loeb N. G., *Science Systems and Applications/NASA LaRC, Hampton, VA, USA*: Invisible clouds' effect on Earth radiation energy budget and infrared radiation modeling.

Suomalainen J., *Finnish Geodetic Institute, Masala, Finland*: Linearly polarized measurement of bidirectional reflectance factor using Finnish Geodetic Institute Field Goniospectrometer.

Syniavskyi I. I., *et al.*, *Main Astronomical Observatory of the National Academy of Sciences of Ukraine, Kyiv, Ukraine*: Instrumentation for polarimetric observations of astronomical objects.

Tishkovets V., *Institute of Radio Astronomy of NASU, Kharkiv, Ukraine*: Effects of microphysical properties of particles on weak localization of electromagnetic waves scattered by random media.

Velichko F. P., *Institute of Astronomy of Karazin Kharkiv National University, Ukraine*: Linear and circular polarimetry, BVRI-photometry of M-type asteroid 16 Psyche.

Velichko S., and Velichko F., *International Center for Astronomical, Medical and Ecological Research, Kiyv, Ukraine*: Polarimetry of some splitting comets.

Veselovskii I., Kolgotin A., Korenskiy M., *et al.*, *Physics Instrumentation Center, Moscow, Russia*: Retrieval of particle parameters from multiwavelength lidar measurements.

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