

# Meteoroids 2001

## Programme

### Session 1: *“Dynamics and Manifestation of Meteor Streams”*

**Date: Monday 8.45-12.30**

#### **8.45-9.00 Opening of the Meteoroids 2001 Conference**

1. 9.00-9.30 **B.A. Lindblad**, “Visual and Radar Observations of Perseid Meteor Stream 1953-83” (Invited).
2. 9.30-9.50 **Hitoshi Hasegawa**, “Millimeter Continuum Observations of Parent Comets of Meteor Storms” (Invited).
3. 9.50-10.05 **O.B. Khavroshkin**, “Meteoroid Stream Impacts on the Moon: Information of Duration of Seismograms”.
4. 10.05-10.20 **Vladimir Sidorov**, “The Discrete Solution of a Quasi-tomography Problem for Construction of the Radiant Distribution of Meteors by Results of Radar Goniometer Measurements”.
5. 10.20-10.35 **A.V. Karpov**, “Thin Space Structure of Meteor Flux Irregularities in Large Meteor Showers in 1986-1999”.

#### **10.35-11.00 Coffee break**

6. 11.00-11.30 **I.P. Williams**, “The Determination of the Ejection Velocity of Meteoroids” (Invited).
7. 11.30-11.45 **V.V. Emel’yanenko**, “Resonance Structure of Meteoroid Streams”.
8. 11.45-12.00 **Michael Mueller**, “Constraining Cometary Ejection Models from Meteor Storm Observations”.
9. 12.00-12.15 **Ichiro Hasegawa**, “Parent Objects of Alpha Capricornid Meteor Stream”.
10. 12.15-12.30 **G.O. Ryabova**, “Asteroid (1620) Geographos as a Possible Parent Body for a Meteor Stream”.

#### **12.30-14.00 Lunch break**

#### **Posters**

(Poster Session A, Tuesday 13.00-16.00)

- PSA-1 **B.A. Lindblad**, “The IAU Meteor Data Center”.
- PSA-2 **G.O. Ryabova**, “Mathematical Model of the Geminid Meteor Stream Formation”.
- PSA-3 **P. Jenniskens**, “The 2000 Ursid Shower Prediction and Observations”.
- PSA-4 **O.I. Belkovich**, “Combined Visual and Radar Observations. 45 Years Later”.
- PSA-5 **O.I. Belkovich**, “Comparative Analysis of Meteor Shower Observations Processed by Three Different Methods”.
- PSA-6 **O.B. Khavroshkin**, “Temporal Structure of Meteoroid Stream and Lunar Seismicity according to Nakamura’s Katalog”.
- PSA-7 **J. Svoren**, “A Fine Structure of Perseid Meteoroid Stream. Method of Indices”.

- PSA-8 **Katsuhito Ohtsuka**, “A New Meteor Shower, eta Eridanids”.
- PSA-9 **L. Neslusan**, “Comparison among the Keplerian-orbit-diversity Criteria in Major-meteor-shower Separation”.
- PSA-10 **Pavel Koten**, “Extreme Beginning Heights for Non-Leonid Meteors”.
- PSA-11 **Y. Fujiwara**, “TV Observation of the 1998 Giacobinid Meteor Shower in Japan”.
- PSA-12 **V. Porubcan**, “The Updated Version of the IAU MDC Database of Photographic Meteor Orbits”.

## Session 2: “*The Leonids Meteor Shower*”

**Date: Monday 14.00-16.05**

1. 14.00-14.30 **David Asher**, “Orbital Perturbations on Dust Trails: Predicting Meteor Storms” (Invited).
2. 14.30-14.50 **Pavel Spurny**, “New Type of Radiation of Bright Leonid Meteors above 130 km” (Invited).
3. 14.50-15.05 **Guang-jie Wu**, “Prediction and Observations of Leonid Meteor Shower in China”.
4. 15.05-15.20 **Douglas O. ReVelle**, “Theoretical Entry Modeling of Large Leonid Bolides”.
5. 15.20-15.35 **Jurgen Rendtel**, “On Periodic Activity Variations during the 1999 Leonid Meteor Storm in Various Data Sets”.
6. 15.35-15.50 **V. Porubcan**, “Five-year Cooperative Radio Observations of the Leonid Meteoroid Stream by the BLM Radar System”.
7. 15.50-16.05 **Noah Brosch**, “Meteor Observations from Israel”.

### Posters

(Poster Session A, Tuesday 13.00-16.00)

- PSA-13 **P. Jenniskens**, “Leonid Storm Research in the Near Future”.
- PSA-14 **J. Watanabe**, “The Activity Profile of Comet 55P/Tempel-Tuttle in 1998 Return: Meteoroid Release Concentration on Perihelion”.
- PSA-15 **Douglas O. ReVelle**, “Leonid Entry Modeling: Application to the Bolide of November 17, 1999”.
- PSA-16 **O.B. Khavroshkin**, “Radioseismology as a New Method of Investigations of Meteor Streams on the Moon and Planets”.
- PSA-17 **Hiroshi Ogawa**, “The Global Monitor of Meteor Streams by Radio Meteor Observation”.
- PSA-18 **Hiroataka Serizawa**, “The Result of 1999 Leonids Daytime Observation in Japan”.
- PSA-19 **M.D. Campbell**, “Ground-based Observations of the Leonids 1999-2000”.
- PSA-20 **Jiri Borovicka**, “Video Spectra of Leonids and Other Meteors”.
- PSA-21 **Y. Fujiwara**, “The Leonid Meteors Found in Chinese Historical Records”.
- PSA-22 **Toshio Tsukamoto**, “Spectroscopic Analysis of Fine Structures in Leonids”.
- PSA-23 **J.D. Drummond**, “Persistent Leonid Meteor Trails: Types I and II”.
- PSA-24 **Shinsuke Abe**, “Fine Structures within the Leonid Dust Trail: Resonant Filament”.
- PSA-25 **Werner Singer**, “Radar Observations of the 1999 and 2000 Leonid Meteor Storms at Middle Europe and Northern Scandinavia”.
- PSA-26 **R. Selvamurugan**, “Observations on Stratospheric-Mesospheric-Thermospheric Temperatures Using Indian MST Radar and Co-located LIDAR during Leonid Meteor Shower (LMS)”.

## Session 3: “Physics and Chemistry of Meteors”

**Date: Tuesday 8.30-11.20**

1. 8.30-9.00 **Edmond Murad**, “Physics and Chemistry of Meteoroids in the Upper Atmosphere” (Invited).
2. 9.00-9.20 **O.P. Popova**, “Formation of Disturbed Area around Fast Meteor Body” (Invited).
3. 9.20-9.35 **P. Jenniskens**, “Meteors: A Delivery Mechanism of Organic Matter to the Early Earth”.
4. 9.35-9.50 **V.L. Kuznetsov**, “The Model of the Quasi-continuous Fragmentation and its Application to the Analysis of Meteoric Observations”.
5. 9.50-10.05 **Pavel Koten**, “Light Curves of Faint Meteors”.

**10.05-10.30 Coffee break**

6. 10.30-10.50 **M. Campbell**, “Fragmentation and Initial Radius” (Invited).
7. 10.50-11.05 **Petr Pecina**, “On the Variable Meteors Parameters”.
8. 11.05-11.20 **R.L. Hawkes**, “High Resolution Meteor Light Curve Investigations”.

### Posters

(Poster Session A, Tuesday 13.00-16.00)

PSA-27 **G.G. Novikov**, “About Pulsation Brightness of the Bright Meteors”.

**11.30-13.00 Lunch break**

**and**

**13.00-16.00 Poster Session A**

**or**

**11.30-16.00 Excursion to Esrange (Group B)**

## Session 4: “Optical Observations of Meteors”

**Date: Tuesday 16.00-17.25**

1. 16.00-16.20 **Shinsuke Avell Abe**, “Spectroscopic Study of Meteor and Persistent Train” (Invited).
2. 16.20-16.40 **Ulf von Zahn**, “Differential Ablation of Meteoroids as Observed by Ground-based Lidars” (Invited).
3. 16.40-16.55 **Sirko Molau**, “The AKM Video Meteor Network”.
4. 16.55-17.10 **R. Stork**, “Double Station TV Meteors and Analysis of their Trajectories”.
5. 17.10-17.25 **Takuji Nakamura**, “Meteor Head Echo Observations by the MU Radar and Simultaneous ICCD Camera Observations”.

### Posters

(Poster Session A, Tuesday 13.00-16.00)

PSA-28 **Masayoshi Ueda**, “Results of Double-station TV Observations during 1998 and 2000”.

- PSA-29 **Takuji Nakamura**, “Observation of Leonid Activity in 1998 and 1999 with the MU Radar and an All-sky TV Camera”.
- PSA-30 **Urban Brändström**, “ALIS (Auroral Large Imaging System) Used for Optical Observations of the Meteor Impact Process”.
- PSA-31 **Pavlo M. Kozak**, “Some Features of Digital Kinematic and Photometrical Processing of Faint TV Meteors”.

## **Session 5: “Impacts of Meteoroids on the Atmosphere”**

**Date: Wednesday 8.30-10.00**

1. 8.30-9.00 **John Plane**, “The Impact of Extra-terrestrial Dust on the Upper Atmosphere” (Invited).
2. 9.00-9.15 **Yang Su**, “The Dispersion of the Swarm of Fragments of Large Meteoroids due to Aerodynamic Forces”.
3. 9.15-9.30 **V.G. Kruchynenko**, “Thermal Explosions of Meteoroids in the Earth’s Atmosphere”.
4. 9.30-9.45 **W.G. Elford**, “The Effective Diffusion Coefficient of Meteor Trails above 100 km”.
5. 9.45-10.00 **Meers Oppenheim**, “Non-specular Meteor Trails: What Does Linear Plasma Theory Teach us about Field-aligned Irregularities?”.

**10.00-10.30 Coffee break**

### **Posters**

(Poster Session A, Tuesday 13.00-16.00)

- PSA-32 **J. D. Mathews**, “Updated Micrometeoroid Mass Flux Results from Arecibo Meteor Observations”.
- PSA-33 **Arkady Karpov**, “The Computer Model ‘KAMET’: A New Generation”.
- PSA-34 **L. Foschini**, “On the Atmospheric Dynamics of the Tunguska Cosmic Body”. (Dedicated to P. Farinella.)
- PSA-35 **Arkady Karpov**, “The Measurement of Ozone Concentration by Kazan radar observations”.
- PSA-36 **Steven Marsh**, “Meteor Trails as a Probe for Measuring the Dynamics of the Upper Atmosphere”.
- PSA-37 **D. Despois**, “Microwave Observations of Molecules in the Earth Atmosphere during a Meteor Shower: The Leonids”.

## **Session 6: “Classical Radar Observations of Meteors”**

**Date: Wednesday 10.30-12.00**

1. 10.30-11.00 **W.J. Baggaley**, “Features of the Enhanced AMOR: The Advanced Meteor Orbit Radar” (Invited).
2. 11.00-11.15 **J. Jones**, “Radar-meteor Velocity Determination”.
3. 11.15-11.30 **A.R. Webster**, “Interferometric Radar Observations at Widely Separated Locations”.
4. 11.30-11.45 **Petr Pecina**, “Relation between the Optical and Radar Characteristics of Meteor”.

5. 11.45-12.00 **W.G. Elford**, “Observations of the Structure of Meteor Trails at Radio Wavelengths Using Fresnel Holography”.

**12.00-13.00 Lunch**

**13.00-14.30 Tour of the Space Campus**

### **Posters**

(Poster Session B, Thursday 13.00-16.00)

- PSB-1 **Masayoshi Ueda**, “Results of Forward-Scatter Radio Observations”.
- PSB-2 **W.G. Elford**, “Effects of Meteoroid Fragmentation on Radar Observations of Meteor Trails”.
- PSB-3 **W.G. Elford**, “Radar Meteor Observations at 2 MHz”.
- PSB-4 **Petr Pecina**, “TV and Radar Observation of Meteors”.
- PSB-5 **Shinsuke Abe**, “The Detection of the Motion of Radio Meteor Reflection Point of Geminids by HRO”.
- PSB-6 **Shinsuke Abe**, “The Earth Rotation and Revolution Effect of the Daily and Annual Variation of Sporadic Meteor Echo by HRO”.
- PSB-7 **Thomas Ulich**, “The New Meteorite Radar of the Sodankylä Geophysical Observatory”.

## **Session 7: “Observations of Meteors Using Large Aperture Radars”**

**Date: Wednesday 14.30-17.15**

1. 14.30-14.50 **A.Pellinen-Wannberg**, “The High Power Large Aperture Radar Method for Meteor Observations” (Invited).
2. 14.50-15.20 **J. D. Mathews**, “The Role of Large-Aperture V/UHF Radar Meteor Observations in Meteor Science” (Invited).
3. 15.20-15.35 **Qihou H. Zhou**, “Observations of Field Aligned Irregularities in Meteor Trails Using the MU Radar”.
4. 15.35-15.50 **Stephen Hunt**, “Two-frequency Meteor Observations Using ALTAIR”.
5. 15.50-16.05 **Philip J. Erickson**, “Meteor Head Echo Observations Using the Millstone Hill/MIDAS-W UHF Incoherent Scatter Radar System”.

**16.05-16.30 Coffee break**

6. 16.30-16.45 **Lars Dyrud**, “Meteor Trail Evolution: Comparison between ALTAIR Radar Observations and Plasma Simulations”.
7. 16.45-17.00 **Diego Janches**, “Tristatic Measurements of Meteors Using the 930 MHz EISCAT Radar System”.
8. 17.00-17.15 **C. J. Heinselman**, “Sondrestrom ISR Meteor Measurements”.

### **Posters**

(Poster Session B, Thursday 13.00-16.00)

- PSB-8 **A.Yu. Ol'khovarov**, “A Problem of a Meteor Head Echo”.
- PSB-9 **P. Brown**, “Astronomical and Physical Data for Micrometeoroids Recorded by the ALTAIR Radar”.

## **Session 8: “Fireballs, Bolides and Meteorites”**

**Date: Thursday 8.30-10.05**

1. 8.30-8.50 **J. Borovicka**, “The Moravka Meteorite Fall: Fireball Trajectory, Orbit and Fragmentation” (Invited).
2. 8.50-9.05 **A. E. Rosaev**, “On the Relationship between Asteroids, Fireballs and Meteorites”.
3. 9.05-9.20 **Douglas O. ReVelle**, “Infrasonic Monitoring of the Global Influx Rate of Large Bolides”.
4. 9.20-9.35 **Zdenek Ceplecha**, “Bolide Fragmentation Processes: Comparisons of Bolide Data against Theoretical Bolide Models”.
5. 9.35-9.50 **A.Yu Ol’khatov**, “On Electrophonic Phenomena”.
6. 9.50-10.05 **Peter Brown**, “The Tagish Lake Meteorite Fall: Interpretation of Physical and Orbital Data”.

**10.05-10.30 Coffee break**

### **Posters**

(Poster Session B, Thursday 13.00-16.00)

- PSB-10 **Z. Ceplecha**, “Relation of Meteoroid Ablation-Classification to Light Curves”.
- PSB-11 **Z. Ceplecha**, “Bolide Fragmentation Theory with Application to PN and EN fireballs”.
- PSB-12 **Douglas O. ReVelle**, “Bolide Fragmentation Modeling”.
- PSB-13 **Douglas O. ReVelle**, “Bolide Luminosity Modeling: Comparisons between Uniform Bulk Density and Porous Meteoroid Models”.
- PSB-14 **Peter Brown**, “Recent Infrasonic Observations of Large Bolides”.
- PSB-15 **Pavel Spurny**, “Common Ground-based Optical and Radiometric Detections of Fireballs within the Czech Part of the European Fireball Network”.
- PSB-16 **Pavel Spurny**, “The EN310800 Vimperk Fireball: Probable Meteorite Fall of an Athen-type Orbit Meteoroid”.

## **Session 9: “Hypervelocity Impact Effects on Spacecraft”**

**Date: Thursday 10.30-11.45**

1. 10.30-11.00 **Gerhard Drolshagen**, “Hypervelocity Impact Effects on Spacecraft” (Invited).
2. 11.00-11.15 **J.C. Mandeville**, “Cosmic Dust and Micro-debris Measurements on Space Station MIR”.
3. 11.15-11.30 **G. Ferrini**, “Capture of Meteoroids by Aerogel Exposed on the MIR”.
4. 11.30-11.45 **Veronika Ekstrand**, “Comparison of Meteoroid and Space Debris Fluxes to Spacecraft in Earth Orbit”.

**11.30-13.00 Lunch break**

**and**

**13.00-16.00 Poster Session B**

**or**

**11.30-16.00 Excursion to Esrange (Group A)**

**16.00-17.30 Presentation of EISCAT Scientific Association and excursion to EISCAT Kiruna Site (Gudmund Wannberg)**

## **Session 10: “Physical Properties of Interplanetary Dust”**

**Date: Friday 8.30-11.50**

1. 8.30-9.00 **B. Gustafson**, “Porous Flake Meteoroids and the Structure of Small Bodies in the Solar System” (Invited).
2. 9.00-9.20 **O.I. Belkovich**, “Is Problem of Sporadic Meteoroids Space Distribution Solving Correct?” (Invited).
3. 9.20-9.35 **David Galligan**, “Probing the structure of the interplanetary dust cloud using the AMOR meteoroid orbit radar”.
4. 9.35-9.50 **J. Jones**, “A Physical Model of the Sporadic Meteoroid Complex”.
5. 9.50-10.05 **S. Nikolova**, “Lifetimes of Meteoroids in Interplanetary Space: The Effect of Erosive and Catastrophic Collisions”.

**10.05-10.30 Coffee break**

6. 10.30-10.50 **A.Ch. Levasseur-Regourd**, “Clues to the Structure of Micro-meteoroids, from Dust Light Scattering Properties” (Invited).
7. 10.50-11.05 **Sho Sasaki**, “Detection of Interplanetary and Interstellar DUST particles by Mars Dust Counter (MDC) on Board NOZOMI”.
8. 11.05-11.20 **Amara L. Graps**, “Io Revealed in the Jovian Dust Streams”.
9. 11.20-11.35 **V. Dikarev**, “Components of a New Interplanetary Meteoroid Model”.
10. 11.35-11.50 **Håkan Svedhem**, “Dust Measurements in the Geostationary Orbit”.

**11.50-13.30 Lunch break**

### **Posters**

(Poster Session B, Thursday 13.00-16.00)

- PSB-17 **Vladimir Sidorov**, “Microswarm Structure of a Meteoric Complex Outside of a Plane of an Ecliptic”.
- PSB-18 **Yoshimi Hamabe**, “Development of a New Reflectron Type TOF Mass Spectrometer for Dust Analysis in Space”.
- PSB-19 **Yu. I. Voloshchuk**, “The Complex of Asteroids, Comets and Meteoroids”.
- PSB-20 **Ingrid Mann**, “Cosmic Dust near 1 AU”.

## **Session 11: “Interstellar Meteors and Dust”**

**Date: Friday 13.30-16.15**

1. 13.30-14.00 **M. Landgraf**, “Contemporary Interstellar Meteoroids in the Solar System: In-situ Measurements and Clues on Composition” (Invited).
2. 14.00-14.30 **Hiroshi Kimura**, “Properties of Interstellar Dust Derived From In-Situ Measurements and Extinction Observations” (Invited).

3. 14.30-14.45 **Ingrid Mann**, “Dust and Meteoroids in Extra-solar Planetary Systems”.
4. 14.45-15.00 **S.V. Kolomiyets**, “Interstellar Particle Detection and Selection Criteria of the Meteor Streams”.

**15.00-15.30 Coffee break**

5. 15.30-15.45 **Eberhard Gruen**, “Dust Astronomy”.
6. 15.45-16.00 **Jack Baggaley**, “Mapping the Interstellar Dust Flow into the Solar System Using AMOR”.
7. 16.00-16.15 **Diego Janches**, “The Size Distribution of Arecibo ISPs and its Implications”.

**Posters**

(Poster Session B, Thursday 13.00-16.00)

- PSB-21 **Diego Janches**, “Arecibo Detection of a ‘Large’ Mass Component in the Ulysses Interstellar Dust Flow”.
- PSB-22 A.R. Bagautdinova and **O.I. Belkovich**, “Expected Distribution of Interstellar Meteoroids in the Vicinity of the Earth’s Orbit”.
- PSB-23 **Nogami Nagatoshi**, “Possibility of Meteor Path Determination by Records in Ancient Chinese Local Gazetteers”.