

**The 2002 International Science Symposium
on the Leonid Meteor Storms
at MeSci, Tokyo, Japan**

PROGRAM TIME TABLE

Wednesday May 01

17:30-19:30 On-site Registration and Welcome Drink
@ Conference Room 3 (CR3)

Thursday May 02 <Day 1>

08:30-09:30 On-site Registration and Poster Display
@ Mirai CAN Hall (HAL) Entrance

09:30-09:40 **Opening Address**
@ Mirai CAN Hall (HAL)
LOC Chair: **Hajime YANO** (Institute of Space and Astronautical Science, Japan)

09:40-10:10 **Memorial Talk: Motion of Leonid meteoroids and
predictions of meteor showers**
@ Mirai CAN Hall (HAL)
Guest Speaker: **Yoshihide KOZAI** (Director, Gunma Astronomical Observatory,
Japan / Former Director-General, National Astronomical Observatory, Japan)

10:10-12:30 **Oral Session I : Leonid History, Parent Comet, Dust Tube**
@ Mirai CAN Hall (HAL)
Co-Chairs: **Hajime YANO** and **Pavel SPURNY**

10:10-10:30 **Peter JENNISKENS** (SETI Institute, USA)
A bibliography of Leonid storm research (20)

10:30-10:40 **Kiyoshi IZUMI** (Nippon Meteor Society, Japan)
The activity of the Leonids past 29 years (10+Poster)

10:40-11:00 **Toshihiko HAMANE**, **H. KAWAKITA** (Gunma Astronomical Observatory, Japan),
B. SUZUKI (Saitama Prefectural Misato Technological High School, Japan), **H. YANO**

(ISAS, Japan), M. YOSHIDA and J-I. WATANABE (National Astronomical Observatory, Japan)

Gas-to-dust ratio and chemical composition in comet 55P/Tempel-Tuttle (20)

11:00-11:20 Coffee Break A

11:20-11:30 **Fumihiko USUI** (University of Tokyo, Japan) and M. ISHIGURO (ISAS, Japan)
Observation of a faint glow of scattered sunlight from the dust trail of the Leonid parent comet 55P/Tempel-Tuttle (10+Poster)

11:30-11:50 **Toshifumi YANAGISAWA** (National Aerospace Laboratory, Japan), K. OHNISHI (Nagano National College of Technology, Japan), K. TORII, M. KOHAMA (Riken, Japan), A. NAKAJIMA (National Aerospace Laboratory, Japan), and D. ASHER (Armagh Observatory, UK)
Separation of 1699yr and 1866yr radiant points by use of "the line detection method" (20)

11:50-12:10 **Bunji SUZUKI** (Saitama Prefectural Misato Technological High School, Japan)
The Preliminary Results of Astro-HS Video Observation Network (20)

12:10-12:30 **Peter JENNISKENS** (SETI Institute, USA)
The one-revolution dust trail of comet 55P/Tempel-Tuttle and Leonid MAC near-real time flux measurements (20)

End of Oral Session I

12:30 - 14:00 Lunch

14:00 - 17:05 **Oral Session II : Meteor Storm Activities**

@ Mirai CAN Hall (HAL)

Co-Chairs: **Takuji NAKAMURA and Michael TAYLOR**

14:00-14:20 **Kouhei ISHIKAWA** (Wakayama University, Japan), T. OZAWA, Y. YADOUMARU (Misato Observatory, Japan), S. KINOSHITA (Wakayama University, Japan), and J-I. WATANABE (National Astronomical Observatory, Japan)
Leonids' movie taken with an electric-cooled color CCD camera (20)

14:20-14:45 **Alexander MIKISHEV** (Israeli Astronomical Association, AEK, Israel)
Comprehensive analysis of visual Leonids (1998-2000) (25)

14:45-15:05 **Hiroshi OGAWA** (Tsukuba University, Japan), S. TOYOMASU (Misato Observatory), K. OHNISHI (Nagano National College of Technology, Japan), S. AMIKURA (Tsukuba University, Japan), T. ASAHINA (Hiroshima University, Japan), K. MIYAO (Asahigaoka High School), K. MAEGAWA (Fukui National College of Technology, Japan)
Leonids 2001 by Radio Meteor Observation all over the world (20)

15:05-15:25 **Kouji OHNISHI**, T. ISHIKAWA, S. HATTORI (Nagano National College of technology, Japan), K. MAEGAWA (Fukui National College of technology, Japan), J-I. WATANABE (National Astronomical Observatory, Japan), and Takuji

Nakamura(RASC, Kyoto University, Japan)

Leonid 2001 flux by radio observation using a beam antenna (20)

15:25-15:45 **Yousuke UTSUMI** (The Secondary School Attached to the Faculty of Education,
University of Tokyo, Japan) **Simulation for detective field of HRO (20)**

15:45-16:05 Coffee Break B

16:05-16:25 **Toshiaki TAKANO** and K. SAKAI (Chiba University, Japan)
**Reflection of VHF Radio Waves from Distant Oversea TV Stations with
Leonid Meteor Storms (20)**

16:25-16:45 **Takuji NAKAMURA** (RASC, Kyoto University, Japan), J-I. WATANABE
(National Astronomical Observatory, Japan), T. TSUDA(RASC, Kyoto University,
Japan), T. SATO (Graduate School of Informatics, Kyoto University, Japan) and
PSMOS/Japan Group
**Observation of Leonid meteor shower and middle/upper atmosphere with the
MU radar (20)**

16:45-17:05 **Takashi MARUYAMA**, H. KATO, and M. NAKAMURA (Communications
Research Laboratory, Japan)
**Ionosonde observations of radio echoes during Leonid meteor shower event of
November 2001 (20)**

End of Oral Session II

17:05-17:45 **Three-Minute Poster Appeals I**

@ Mirai CAN Hall (HAL)

Chair: **Toshifumi YANAGISAWA**

I-1. Toru SAGAYAMA, Result of Leonid observation from 1997 to 2001

I-2. Yasunori FUJIWARA, TV observations of the 2001 Leonid meteor showers

I-3. Satoru SUZUKI, Multi-station TV observation of Leonids 2001

I-4. Masayoshi UEDA, Results of the 2001 Leonid meteor shower by TV observations

I-5. Yoshiaki FUJIYOSHI, Leonid Meteor Shower (LMS) DOING Twilight-Sunrise

I-6. Yoshiaki FUJIYOSHI, Leonid Meteor Shower (LMS) Showing through the cloud

I-7. Isamu HATSUKADE, Development of the Linux-based video observation system for meteors

I-8. Yoshihiko SHIGENO, Radiants and orbital elements distribution of the 2001 Leonid

I-9. Mitsuhito KOHAMA, Faint meteors search for the radiant point using robotic telescopes

I-10. Tomoyasu TANIGAWA, The unevenness of density on dust trail

I-11. Shigeo UCHIYAMA, Estimated ZHR profiles of 4-revolution dust trail and 9-revolution dust
trail in 2001 Leonid meteor storm

I-12. Pavel KOTEN, Atmospheric trajectories and light curves of the 2000 Leonid meteors
(absentia)

17:45-19:00 **Poster Session Core Time I**

@ Conference Room 1,2 (CR1,2)

End of Poster Session Core Time I

Friday May 03 <Day 2>

08:30- On-site Registration
@ Mirai CAN Hall (HAL) Entrance

09:30-12:15 **Oral Session III: Spectroscopy and Astrobiology**
@ Mirai CAN Hall (HAL)
Co-Chairs: **Jun-ichi WATANABE** and **Jiri BOROBIKA**

09:30-09:55 **Frans J.M. RIETMEIJER** (University of New Mexico, Albuquerque, USA),
**Synergy of properties of Meteors and collected Interplanetary Dust Particles and
Micrometeorites (25)**

09:55-10:20 **Peter JENNISKENS** (SETI Institute, USA), **E. SCHALLER** (Dartmouth College,
USA), **C. LAUX** (Stanford University, USA), **M. WILSON** (NASA Ames Research
Center, USA)
**Recent observations of aero-thermochemistry effects in the plasmas of fast
Leonid meteors and implications for the origin of life (25)**

10:20-10:30 **Rick RAIRDEN** (Lockheed Martin, Co., USA) and **P. JENNISKENS** (SETI Institute,
USA)
Search for Organic Matter in Leonid Meteoroids (10+Poster)

10:30-10:40 **Kristina SMITH** (MEDECO, Inc., USA)
**Visible-near infrared observations of the Leonid meteor storm with digital
array scanned interferometers (10+Poster)**

10:40-11:00 Coffee Break C

11:00-11:20 **Shinsuke ABE**, **H.YANO** (Institute of Space and Astronautical Science, Japan), **N.
EBIZUKA**(RIKEN, Japan), **J-I. WATANABE** (National Astronomical Observatory,
Japan), **T. KASUGA** (Nagoya University, Japan), **R. Ogasawara** and **T. Fuse** (National
Astronomical Observatory-Subaru Telescope, HI, USA)
UV video spectroscopy of Leonid fireballs and persistent trains (20)

11:20-11:55 **James PETERSON**, **P. SEVILLA**, **J. KRISTL**, **M. LARSEN** (Utah State University,
USA) and **R. RUSSELL** (Aerospace Corporation, USA)
Measurement results in the mid-wavelength infrared from Leonid's 2001 (25)

11:55-12:15 **Ryosuke NAKAMURA**, **S. TSUJIMARU** (National Space Development Agency of
Japan, Japan), **T. ITOH** and **S. YAMAMOTO** (University of Tokyo, Japan)
Submillimeter observation of formaldehyde injected by Leonid meteors (20)

End of Oral Session III

12:15-12:30 Group Picture Session
@ Mirai CAN Main Gate

Photographer: Kenji KARASAKI

12:30 - 14:00 Lunch.

14:00-15:10 **Three-Minute Poster Appeals II (Including High School Posters)**

@ Mirai CAN Hall (HAL)

Chair: **Bunji SUZUKI**

- II-1. **Satoshi SUSUKI**, Near infrared, visible spectral observation of meteor trains
- II-2. **Toshihiro KASUGA**, High definition TV spectra of 1999 - 2001 Leonids in VIS-UV region
- II-3. **Masayuki TODA**, Meteor train observation campaign in Japan II: Evolution of the campaign and observation results during 1998-2001
- II-4. **Yoshihiro HIGA**, Meteor train observation campaign in Japan III: High-resolution images obtained in the campaign and morphology of the meteor train
- II-5. **Masumi NISHIO**, Simultaneous observation of the faint meteors by the MU radar head echo mode and a high sensitive video camera of Leonid observation network for high school students
- II-6. **Hiroshi OGAWA**, Leonids 2001 radio meteor observation Network in Japan
- II-7. **Kouji OHNISHI**, Radiant observation project of Leonids 2001
- II-8. **Teruaki YOSHIDA**, Meteor echoes of FM broadcasting signals in the 2001 Leonids
- II-9. **Katsuhiko MOURI**, Practical use of the Leonids C.G. and movies on the Planetarium and the Web

< Japanese High School Student Session >

- II-10. **Bunji SUZUKI**(Saitama Prefectural Misato Technological High School), The project of Leonid observation network for high school students
- II-11. **Hajime GOTOU**(The Secondary School attached to the Faculty of Education of the Univ. of Tokyo), Analysis of Meteoric Luminescence in Meteor Streams by CCD Video
- II-12. **Asuka SUZUKI, Taki YASUDA, and Chieko KAJIWARA**(Earth Science and Astronomy Club, Saitama Prefectural Kawagoe Girls' High School), The Analysis of Leonid meteor spectra
- II-13. **Natural Science Club**(Saitama Prefectural Misato Technological High School), The reappearance experiment of Leonid meteor spectrum using gas welding
- II-14. **Ougiya Kyoko**(Earth Science Club, IAI Girls' Junior and Senior High School), Observational Results of Leonid 2001 by South Hokkaido Senior High
- II-15. **Earth Science Club**(Sugamo High School), Observation of Leonid meteor shower at Tokyo megalopolis
- II-16. **Sadao OKAMOTO and Yoshiaki YAMADA**(Sugiyama Jogakuen Senior High School), Observation of Leonid meteor shower (absentia)
- II-17. **Takashi ASAHINA**(Meijo Univ. Senior High School (present: Hiroshima Univ.)), Leonids 2001 by Ham-band Radio Observation and CCD video observation
- II-18. **Astronomy and Meteorology Club, Saitama Prefectural Koshigaya-Kita High School**, Ham-band Radio Observation of Leonids
- II-19. **Astronomy Club**(Nagano National College of Technology), Radio Observation of Meteors
- II-20. **UHS Astronomy and Meteorology Club & NCT Astronomy Club**(Nagano Prefectural Ueda High School & Nagano National College of Technology), Detection rate of radio meteors
- II-21. **Kayo MIYAO**(Aichi Prefectural Asahigaoka High School), The estimate of Leonids 2001 peak in HRO by comparing with FRO

15:10-17:00 **Poster Session Core Time II**
@ Conference Room 1,2 (CR1,2)

End of Poster Session Core Time II

(15:30-17:00 Press Conference: Selected participants only)

(@Mirai CAN Hall (HAL))

Chair: **Tomoya NAGAI** (National Museum of Emerging Science and Innovation, Japan)

18:00-21:00 Symposium Banquet and Evening Presentation

(Advanced Reservation Only)

@5K Planets Restaurant

Guest of Honor / Evening Speaker: **Mamoru MOHRI** (Director, National Museum of Emerging Science and Innovation, Japan / Astronaut, National Space Development Agency of Japan, Japan)

Saturday May 04 <Day3>

08:30- On-site Registration

@ Mirai CAN Hall (HAL) Entrance

09:30 – 11:55 **Oral Session IV : Meteoroid Structure and Bursts**

@ Mirai CAN Hall (HAL)

Co-Chairs: **Shinsuke ABE and Frans REITMEIJER**

09:30-09:55 **Olga POPOVA, A.S. STRELKOV, S.N. SIDNEVA, and V.V. SHUVALOV** (Institute for Dynamics of Geospheres Russian Academy of Science, Russia)

Formation of disturbed area around fast meteor body (25)

09:55-10:20 **Ian MURRAY** (University of Regina, Canada), **M. BEECH** (Campion College, Canada), **M. SCHROEDER** (University of Regina, Canada), **M. TAYLOR** (Utah State University, USA) and **P. JENNISKENS** (SETI Institute, USA)

Comparative morphology of Leonid meteor light curves in visual sodium and magnesium light (25)

10:20-10:45 **Hans C. STENBAEK-NIELSEN** (University of Alaska Fairbanks, USA)

Leonid meteor imaged at 1000 frames per second (25)

10:45-11:05 Coffee Break D

11:05-11:30 **Juraj TOTH** (AI FMFI Comenius University Bratislava, Slovakia), **H. YANO**

(Institute of Space and Astronautical Science, Japan), **V. PORUBCHAN** (AI FMFI Comenius University Bratislava, Slovakia)

Leonid 1999 shower clustering analysis from HD TV data (25)

11:30-11:55 **Jun-ichi WATANABE** (National Astronomical Observatory, Japan), **I. TABE** (Libra, Co., Japan), **H. HASEGAWA** (Astec, Co., Japan), **T. FUSE** (National Astronomical Observatory –Subaru Telescope, HI, USA), **M. YOSHIKAWA**, and **S. ABE** (Institute of Space and Astronautical Science, Japan)

Meteoroid clusters: Evidence of Fragmentation in space ? (20)

End of Oral Session IV

11:55-13:30 Lunch

13:30-16:35 **Oral Session V : Effects in the Upper Atmosphere and Space**

@ Mirai CAN Hall (HAL)

Co-Chairs: **Ryosuke NAKAMURA and Hans C. STENBAEK-NIELSEN**

13:30-13:50 **Yasushi YADOUMARU, T. OZAWA**(Misato Observatory, Japan), **K. ISHIKAWA, S. KINOSHITA**(Wakayama University, Japan), **J-I. WATANABE** (National Astronomical Observatory, Japan)

Persistent meteoric trains in a movie of the Leonids storm 2001 (20)

- 13:50-14:10 **Masa-yuki YAMAMOTO** (Communication Research Laboratory, Japan), **M. TODA**, **Y. HIGA** (Nippon Meteor Society, Japan), and **M. FUJITA** (Tohoku University, Japan)
Meteor Train Observation Campaign in Japan I: Overview of the campaign and first results of Leonids in 2001 (20)
- 14:10-14:25 **Jiri BOROVICKA**, **P.KOTEN** (Astronomical Institute of the Academy of Sciences/Ondrejov Observatory, Czech Republic), **H.BETLEM** (Dutch Meteor Society, The Netherlands), **S. EVANS** (Little Thurlow, Haverhill, UK), **P.SPURNY** (Astronomical Institute of the Academy of Sciences/Ondrejov Observatory, Czech Republic), and **J. KAC** (Slovenia)
Video spectroscopy of Leonid persistent trains (25)
- 14:25-14:50 **Mike TAYLOR**, **L.C. GARDNER** (Utah State University, USA) and **C. PRICE**(Canada)
Observations of transient lightning effects over southern Europe (25)
- 14:50-15:10 Coffee Break E
- 15:10-15:35 **Pavel SPURNY**, **P.KOTEN** and **J.BOROVICKA** (Astronomical Institute of the Academy of Sciences/Ondrejov Observatory, Czech Republic), **H.BETLEM** (Dutch Meteor Society, The Netherlands), and **S. EVANS** (Little Thurlow, Haverhill, UK)
Meteors at very high altitudes - what we know new from our observations? (25)
- 15:35-15:55 **Kazuya YOSHIDA** (Tohoku University, Japan)
LEOLEO-II: a Feasibility Study on Observation of Meteor Shower from Orbit (20)
- 15:55-16:15 **Hajime YANO**, **S. ABE**, **M. YOSHIKAWA** (Institute of Space and Astronautical Science, Japan), **T. KASUGA** (Nagoya University, Japan), **N. KADOWAKI** (Communication Research Laboratory, Japan), **N. EBIZUKA** (RIKEN, Japan), and **J-I. WATANABE** (National Astronomical Observatory, Japan), **Satellite impact hazard assessment from Leonid meteoroid size and spatial distributions in 1998-2001 (20)**
- 16:15-16:35 **Takeshi SAKANOI**, **T. KURODA**, **S. TAKAHASHI**, **R. IKEDA**, and **S. OKANO** (PPARC, Tohoku University, Japan), **Imaging observation of lunar sodium exosphere associated with 2001 Leonid meteor shower (20)**
- 16:35-16:50 Summary of the Symposium and Concluding Remark
@ Mirai CAN Hall (HAL)
LOC Member: **Jun-Ichi WATANABE** (National Astronomical Observatory, Japan)
- 17:10-19:00 Leonid MAC Open Business Meeting: Potential MAC participants and any interested participants are welcome
@ Mirai CAN Hall (HAL)
Chair: **Peter JENNISKENS** (SETI Institute, USA)

Sunday May 05

08:00-21:30 Optional Bus Tour to the ISAS-NAOJ-NAL (tentative)

- We have reserved a Hato Bus (hato means a “dove”) with 45 passengers capacity.
<http://www.hatobus.co.jp/>
- 3000 yen for a full day trip must be paid upon your registration by cash
- 08:00 Bus leaves from MeSci Main Entrance
|
- 08:30-09:00 Take a walk around the Imperial Palace
| <http://ohashitugio.hoops.livedoor.com/edo/>
|
- 10:30-12:00 Institute of Space and Astronautical Science (ISAS), Sagamihara, Kanagawa
| <http://www.isas.ac.jp/>
|
- 12:30-13:30 Lunch (Japanese style) To be paid by participants
|
- 15:00-16:00 National Astronomical Observatory (NAOJ), Mitaka, Tokyo
| <http://www.nao.ac.jp/>
|
- 16:30-17:30 National Aerospace Laboratory (NAL), Chofu, Tokyo
| <http://www.nao.ac.jp/>
|
- 19:00 Tokyo Tower
| Viewing Floor at 150m elevation= 820 yen to be paid by participants
| Viewing Floor at 250m elevation= 820 + 600 yen to be paid by participants
| <http://www.tokyotower.co.jp/>
| Dinner (Details to be determined)
- 21:00 Arriving Shinbashi Station (JR line), for those who wish to return “non-Odaiba” hotels
|
- 21:30 Back to MeSci, for those who stay at Ariake Washington and Meridien

(13:00-16:00 Open Lectures for Public at MeSci: Selected speakers only)

- 12:30- Open Doors @ Mirai CAN Hall (HAL)
- 13:00-13:10 **Introduction:** Tomoya NAGAI (MeSci, Japan)
- 13:10-13:30 Video (1): **2001 Leonid Meteor Storm in Japan:** Kenji KARASAKI
- 13:30-14:10 **Leonid Meteor Storm: What it tells us about the Solar System and our life?:**
Hajime YANO (ISAS, Japan)
- 14:10-14:20 Break
- 14:20-14:40 Video (2): **HDTV Images of the Leonids from Aircraft and High Mountains:**
Hajime YANO (ISAS, Japan)
- 14:40-15:20 **Leonid MAC Overview:** Peter JENNISKENS (SETI Institute, USA)
- 15:20-16:00 **Questions & Answers Session:** Tomoya NAGAI (MeSci, Japan)
- 16:00 End of Lectures