

SCIENTIFIC PROGRAM

# 18<sup>th</sup> Electromagnetic and Light Scattering Conference

Zhejiang University, Hangzhou, China

10–14 June 2019



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## Monday, June 10

8:30–8:50 **Opening of the conference** / Lei Bi, M. I. Mishchenko, Jun Wang, and Ping Yang

8:50–9:00 **Conference logistics** / Lei Bi

9:00–10:30 **Electromagnetic theory** / Ping Yang

- *(Invited review)* Gérard Gouesbet, *Generalized Lorenz–Mie theories and mechanical effects of laser light: a celebration of Arthur Ashkin's pioneering work in optical levitation and manipulation* (30 min)
- Anna E. Akhmetyanova and Maxim A. Yurkin, *Optimization of the discrete dipole approximation applied to particles on a plane substrate* (15 min)
- Lei Bi, Feng Xu, and Gérard Gouesbet, *The invariant imbedding approach to the Debye series for light scattering by nonspherical particles* (15 min)
- Qingwei Duan, Xiang'e Han, and Kuan Fang Ren, *Extension of vectorial complex ray model to 3D light scattering by large non-spherical particles* (15 min)
- Yinan Feng, Yiming Yang, and Renxian Li, *Internal and near-surface fields of a charged sphere illuminated by a vector Bessel beam* (15 min)

10:30–11:00 Coffee break

11:00–12:00 **Multiple scattering and radiative transfer** / Feng Xu

- Jun Lai, *A fast algorithm for multi-particle scattering in a layered medium* (15 min)
- Sergey Korkin and Alexei Lyapustin, *Matrix exponential in C/C++ version of vector radiative transfer code IPOL* (15 min)
- Chao Liu, Bin Yao, Vijay Natraj, and Yuk L. Yung, *A unified-principal-component radiative transfer model* (15 min)
- Andrei E. Mukhanov and Dmitrii B. Rogozkin, *Absorptance of densely packed particulate samples* (15 min)

12:00–13:30 Lunch

13:30–14:50 **Atmospheric and oceanic remote sensing** / V. Natraj

- *(Invited)* Xiquan Dong, Baike Xi, Patrick Minnis, William Smith Jr, Norman Loeb, and Ping Yang, *Can active and passive instruments remotely sense the same clouds?* (20 min)
- Romain Ceolato, Lucas Paulien, Matthew J. Berg, William R. Heinson, Anna Gialitaki, Alexandra Tsekeri, Vassilis Amiridis, and Chris Sorensen, *Lidar depolarization ratio for soot fractal aggregates: application to tropospheric and stratospheric smoke* (15 min)
- Thierry Marbach, Oleg Dubovik, Bertrand Fougnie, and Jérôme Riedi, *3MI, the multi-view polarimeter flying on Metop-SGA: concept, calibrations, and products* (15 min)
- W. Reed Espinosa, Robert C. Levy, Oleg Dubovik, Yingxi R. Shi, Lorraine A. Remer, Tatyana Lapyonok, and David Fuertes, *Retrievals of aerosol properties using an*

*AERONET tuned implementation of the Dark Target and GRASP inversion frameworks* (15 min)

- Meng Gao, Peng-Wang Zhai, Bryan Franz, Yongxiang Hu, Kirk D. Knobelspiesse, Jeremy Werdell, Amir Ibrahim, Brian Cairns, and Alison Chase, *Joint retrieval of aerosol properties and water leaving radiance using multi-angular polarimetric measurements over open and coastal ocean waters* (15 min)

14:50–15:20 Coffee break

15:20–17:20 **Optical characterization / M. J. Berg**

- *(Invited review)* Olga Muñoz, Jesús Escobar-Cerezo, Juan Carlos Gómez Martín, Daniel Guirado, and Fernando Moreno, *Light Scattering Experiments at visible wavelengths* (30 min)
- Baptiste Auguie and Eric C. Le Ru, *Electromagnetic interactions of anisotropic dye molecules surrounding a nanosphere* (15 min)
- Isaac C. D. Lenton, Timo A. Nieminen, Alex B. Stilgoe, and Halina Rubinsztein-Dunlop, *Meta-trapping: optical forces on meta-materials* (15 min)
- Emma P. Järvinen and Franz M. Schnaiter, *The angular light scattering function of atmospheric ice crystal ensembles* (15 min)
- Lingxi Li, Simon Rosenkranz, Walter Schäfer, and Cameron Tropea, *A study for the measurement of the drop concentration by using the time-shift technique* (15 min)
- Can Li, Lingxi Li, Cameron Tropea, Xuecheng Wu, and Yingchun Wu, *Measurement of drops with inclusions using rainbow refractometry and time-shift technique* (15 min)
- Richard Medina, *Light scattering studies at the El Paso del Norte Region in Texas* (15 min)

18:00–21:00 **Conference reception**

## Tuesday, June 11

8:30–10:15 **Optical characterization / Chao Liu**

- *(Invited)* Hiroshi Ishimoto, Satoru Adachi, and Kazuhiko Masuda, *X-ray micro-CT imagery of deposited snow in optical modeling of atmospheric ice particles* (15 min)
- Paul Briard, Chen Yuan Li, and Xiao Shu Cai, *Measurement of the aspect ratio distribution of rigid arbitrary shaped nanoparticles using the Translational-Rotational Image-based Dynamic Light Scattering* (15 min)
- Charles E. Chika, *An inverse scattering problem for 2-D dielectrics via Eikonal approximation* (15 min)
- Juan Carlos Gómez Martín, Daniel Guirado, Jesús Escobar-Cerezo, Olga Muñoz, Fernando Moreno, and Evgenij Zubko, *Laser light scattering particle sizing: inherent limitations and effects of optical model selection, unknown refractive index, and irregular particle shape* (15 min)
- Franz Kanngießner and Michael Kahnert, *Coating material-dependent differences in modelled lidar-measurable quantities for heavily coated soot particles* (15 min)
- Alireza Moallemi, Robin L. Modini, Tatsiana Lapyonok, David Fuertes, Anton Lopatin, Gergely Dolgos, Yevgeny Derimian, Benjamin Torres, Oleg Dubovik, and Martin Gysel-Beer, *A comprehensive analysis of aerosol property retrieval from the MicroNeph-GRASP system* (15 min)
- Patricio Piedra, Aimable Kalume, Yong-Le Pan, and Gorden Videen, *Convolutional neural networks for aerosol scattering: the analogy to image recognition problems* (15 min)

10:15–10:45 Coffee break

10:45–12:00 **Atmospheric radiation / Zhengqiang Li**

- *(Invited review)* Seiji Kato, Norman G. Loeb, Fred G. Rose, and David A. Rutan, *Radiative transfer computations in estimating surface and in-atmosphere radiation*

*budget of Earth at a global scale* (30 min)

- Olli Ihalainen, Olli Wilkman, Antti Penttilä, Guanglang Xu, Jyri Näränen, Jouni Peltoniemi, Sonja Lahtinen, Niko Kareinen, Maria Gritsevich, Markku Poutanen, Hannu Koivula, and Karri Muinonen, *A global inverse problem: determining the Bond albedo of the Earth* (15 min)
- Husi Letu, Takashi Y. Nakajima, Hiroshi Ishimoto, Run Ma, and Huazhe Shang, *Estimation of surface solar radiation by Voronoi ice scattering model from Himawari-8 satellite measurements* (15 min)
- Huizheng Che, Tianze Sun, Bing Qi, Yaqiang Wang, Yunsheng Dong, Xiangao Xia, Hong Wang, Ke Gui, Yu Zheng, Hujia Zhao, Qianli Ma, Rongguang Du, and Xiaoye Zhang, *Characterization of aerosol optical characteristics, vertical distribution and radiative forcing of ambient aerosols over the Yangtze River Delta during 2013–2015* (15 min)

12:00–13:30 Lunch

13:30–15:30 **Atmospheric and oceanic remote sensing / F. M. Schnaiter**

- (*Invited review*) Peng-Wang Zhai, Meng Gao, Bryan Franz, Jeremy Werdell, Yongxiang Hu, Kirk D. Knobelspiesse, Brian Cairns, and Amir Ibrahim, *Radiative transfer modeling of the hyperspectral and polarized reflectances for aerosol and ocean color remote sensing* (30 min)
- Zhengqiang Li and Weizhen Hou, *Directional Polarimetric Camera (DPC): Monitoring aerosol spectral optical properties over land from satellite observations* (15 min)
- Vijay Natraj, Zhao-Cheng Zeng, Feng Xu, Thomas J. Pongetti, Run-Lie Shia, Eric A. Kort, Geoffrey C. Toon, Stanley P. Sander, and Yuk L. Yung, *Constraining aerosol vertical profile in the boundary layer using hyperspectral measurements of oxygen absorption* (15 min)
- Xiaoguang Xu and Jun Wang, *Retrieving aerosol height over land via the O<sub>2</sub> A&B bands* (15 min)
- Xi Chen, Jun Wang, Dongxu Yang, Xiaoguang Xu, Ping Yang, Oleg Dubovik, Yi Liu, Michael Mishchenko, and Robert Spurr, *Impact of aerosol non-sphericity on the satellite remote sensing of CO<sub>2</sub>* (15 min)
- Wolfgang Woiwode, Michael Höpfner, Lei Bi, Farahnaz Khosrawi, and Michelle Santee, *Infrared limb detection of large HNO<sub>3</sub>-containing PSC particles in the Arctic winter stratosphere* (15 min)
- J. Vanderlei Martins, Xiaoguang Xu, Brent McBride, Henrique M. J. Barbosa, Anin Puthukkudy, Noah Sienkiewicz, and Lorraine Remer, *The HARP polarimeter family and application to aerosol and cloud characterizations* (15 min)

15:30–16:00 Coffee break

16:00–18:30 **Poster session / Jun Wang**

- Mikhail D. Alexandrov, Daniel J. Miller, Chamara Rajapakshe, Ann Fridlind, Bastiaan van Diedenhoven, and Brian Cairns, *Remote sensing of droplet size profiles in cumulus clouds using the Research Scanning Polarimeter: tests on simulated data*
- J. C. Atenco-Cuautle, I. Cazares-Aguilar, E. J. Alvarado-Letechipia, and G. Martinez-Niconoff, *Study of stochastic processes with time-dependent transition probabilities*
- J. Bai, Z. S. Wu, and C. X. Ge, *Reversal of optical binding force between uniaxial anisotropic heterodimer based on the forced breaking of symmetry*
- Adam Bell, Ping Yang, and D. L. Wu, *Temperature dependence of ice particle refractive index and implications in sub-millimeter ice cloud retrievals*
- Qi-Xiang Chen, Yuan Yuan, and He-Ping Tan, *Retrieval of fine-mode and coarse-mode aerosol optical properties from sun and sky radiance measurements based on aerosol type classification method*
- Fenghong Chu, Allen Haddrell, Antonio Valenzuela, Jim S. Walker, Andrew J. Orr-Ewing, and Jonathan Reid, *Measurements of light extinction by single aerosol particle elevated by linear electrodynamic quadrupole*
- Dmitri B. Demin, Andrey I. Kleev, and Alexander G. Kyurkchan, *Using Pattern Equation Method for solving the problem of EM scattering by thin dielectric cylinder*

- Dmitri B. Demin, Andrey I. Kleev, and Alexander G. Kyurkchan, *Analysis of a scattering by a cylinder of a large cross section using the Hybrid Pattern Equations Method*
- Minzheng Duan, *On the order of atmospheric scattering, its polarization and computation efficiency*
- Cheng-Xian Ge, Zhen-Sen Wu, Jing Bai, and Lei Gong, *A numerical study about optical trapping properties of nanoparticle on composite metallic film*
- Stefania A. Gluhova and Maxim A. Yurkin, *Scattering of Bessel beams in the framework of the discrete dipole approximation*
- Souichiro Hioki, Jérôme Riedi, Laurent Labonnote, Mohamed Djellali, and Huazhe Shang, *Estimating the effective phase function of cloud particles from the 3MI sensor*
- A. U. Ibrahim, H. A. Umar, and S. Muhammad, *An effective method of degrading electromagnetic field in resonant inductive power transfer of automotive vehicle for public safety*
- Emma P. Järvinen and Franz M. Schnaiter, *A new in situ hyper-angular cloud polarimeter for airborne platforms*
- Osku Kemppinen, Ryan Mersmann, Jesse Laning, and Matthew J. Berg, *Atmospheric particle in-situ imaging and classifying with digital holography*
- Muhammed Ali Kecebas, M. Pinar Mengüç, Ali Kosar, and Kursat Sendur, *An impedance based formulation for passive radiative cooling system design*
- Alexander A. Konoshonkin, Anatoli G. Borovoi, Natalia V. Kustova, Victor A. Shishko, and Dmitriy N. Timofeev, *Extinction matrix for cirrus clouds in the visible and infrared regions*
- Alexaner A. Kyurkchan, Sergey A. Manenkov, and Nadezda I. Smirnova, *Application of the method of continuity boundary conditions to the problem of wave diffraction on fractal-like bodies of revolution*
- Isaac C. D. Lenton, Giovanni Volpe, Timo A. Nieminen, Alex B. Stilgoe, and Halina Rubinsztein-Dunlop, *Shining light on particle dynamics with machine learning*
- Li Li, Zhengqiang Li, Xu Zheng, Oleg Dubovik, Zhanhua Li, and Manfred Wendisch, *Aspect ratio distributions of atmospheric aerosol particles and their effects on skylight polarization*
- Jingsong Li, Hao Deng, Ningwu Liu, Zhou Shen, and Horst Fischer, *Impact of H<sub>2</sub>O broadening effect on high-accuracy atmospheric trace gases detection*
- Wushao Lin, Xiaoyun Tang, and Lei Bi, *Assessing superspheroidal dust models in particle scattering and polarized radiative transfer simulations*
- Matt R. A. Majic, Luke Pratley, Dmitri Schebarchov, Walter R. C. Somerville, Baptiste Auguié, and Eric C. Le Ru, *Approximate T-matrix and optical properties of spheroidal particles to third order in size parameter*
- Yang Ou, Zhengqiang Li, and Ying Zhang, *Multi-mode characterization of total columnar aerosols over China based on SONET ground-based remote sensing measurements since 2010*
- Kalluri Raja Obul Reddy, Xiaoyu Zhang, and Lei Bi, *Decreasing trend of aerosol optical thickness associated with crop residue burning in Shangdong province observed from synthetic satellite data products*
- E. Saldivia-Gomez, A. Garcia-Guzman, and G. Martinez-Niconoff, *Analysis of self-regulated processes in optical fields*
- Olga V. Shefer, *Features of spectral dependence of single-scattering characteristics for crystalline clouds*
- Lin Shi, Yingchun Wu, Xuecheng Wu, and Jianqi Shen, *Phase critical angle refractometry for nanoscale bubble growth measurement*
- Nir Shiloah, Moshe Kleiman, and Ioseph Gurwich, *Extinction efficiency calculation of an infinite multilayered cylinder using transmission coefficients*
- Bingqiang Sun, *Fast vector radiative transfer solution using improved small-angle approximation*
- Xiaoyu Sun, Minzheng Duan, Xiangao Xia, Disong Fu, and Zhongdong Yang, *In situ measurement of vertical distribution of CO<sub>2</sub> and CH<sub>4</sub> in the troposphere by aircraft and tethered balloon*
- M. Vargas Morales, G. Martinez Niconoff, M. A. Torres Rodriguez, and P. Martinez Vara, *Location effects induced in moiré patterns with noise*
- Xia Wan, Baike Xi, Guirong Xu, Chunguang Cui, Linli Zhou, and Zhikang Fu, *Doppler*



- velocity comparison of cloud radar and Microrain radar*
- Mingjun Wang, Jihua Yu, Xizheng Ke, and Leili Guo, *Vector radiative transfer properties of inhomogeneous ice clouds in spherical atmosphere*
  - Zheng Wang, Lei Bi, Bingqi Yi, and Xiaoyu Zhang, *The effect of inhomogeneity of wet sea salt aerosols on direct radiative forcing*
  - Wang WanJun and Wu ZHENSen, *The turbulence influence on average intensity of Gaussian beams*
  - Bojian Wei, Renxian Li, Jiaming Zhang, Shu Zhang, Ningning Song, and Han Sun, *Generation of Airy beam using optical antenna*
  - Decheng Wu, Xianming Sun, Dong Liu, Zhiqing Zhong, Bangxin Wang, and Yingjian Wang, *Multiple scattering from liquid cloud measured by using a polarization lidar with two fields of view*
  - Yu Wu, Tianhai Cheng, Dantong Liu, Shuaiyi Shi, Xin Zuo, Wannan Wang, Xiaochuan Zhang, Can Meng, and Qi Ruo, *Light absorption enhancement of black carbon aerosols due to complex particle morphology*
  - Hejun Xie, Lei Bi, and Wei Han, *Simulation of FY-3D observations of Hurricane Maria*
  - Yiming Yang, Yinan Feng, and Renxian Li, *Debye series analysis of plane wave scattering by a charged sphere*
  - Junyou Zhang, Hong Qi, and Liming Ruan, *Determination of thermal accommodation coefficient and primary particle size of soot through light scattering method*
  - Jiaming Zhang, Renxian Li, Han Sun, Ningning Song, Shu Zhang, and Bojian Wei, *Optical force on irregular and inhomogeneous particles by an Airy light-sheet using discrete dipole approximation*
  - Chenchong Zhang, William R. Heinson, Benjamin Sumlin, Michael J. Garay, Olga Kalashnikova, and Rajan K. Chakrabarty, *Sensitivity analysis of polarimetric remote sensing of atmospherically-processed brown carbon aerosol*
  - Ruirui Zong, Wushao Lin, and Lei Bi, *Near-backscattering optical properties of aerosols*

## Wednesday, June 12

### 8:30–10:30 **Electromagnetic theory / R. L. Panetta**

- *(Invited review)* Michael Kahnert and Franz Kanngießer, *Electromagnetic scattering by soot aerosols* (30 min)
- Michael I. Mishchenko, *Electromagnetic scattering of inhomogeneous waves by particles in a weakly absorbing medium* (15 min)
- Maxim A. Yurkin and Alexander E. Moskalensky, *Analysis of energy budget for scattering of fields induced by nearby sources* (15 min)
- Matt R. A. Majic, *Static-limit T-matrix for a dielectric torus* (15 min)
- D. A. Smunev and M. A. Yurkin, *Simulations of scattering by extremely oblate particles with the discrete dipole approximation* (15 min)
- Yingying Zhu, Chao Liu, and Maxim A. Yurkin, *How can the discrete dipole approximation reproduce morphology-dependent resonances of spheres?* (15 min)
- Han Sun, Renxian Li, Jiaming Zhang, Ningning Song, Shu Zhang, and Bojian Wei, *Resonance scattering by a dielectric sphere of a vector Airy beam* (15 min)

10:30–11:00 Coffee break

### 11:00–12:00 **Atmospheric remote sensing / T. Marbach**

- Masanori Saito and Ping Yang, *Optical properties of oriented ice crystals and applications in lidar remote sensing and optical phenomenon simulations* (15 min)
- Masanori Saito and Ping Yang, *Far-infrared measurements benefit nighttime ice cloud property retrievals* (15 min)
- Meng Zhou, Xiaoguang Xu, Jun Wang, Sepehr Roudini, Thomas Pongetti, and Stanley Sander, *Model development for nighttime light radiative transfer and application to VIIRS Day Night Band remote sensing of aerosols* (15 min)
- Chuanfeng Zhao and Xin Yang, *Aerosol optical properties and their impacts on cloud*

*remote sensing* (15 min)

12:00–13:30 Lunch

13:30–19:00 **Excursion**

19:00– 22:00 **Conference banquet and award ceremony**

## Thursday, June 13

8:30–10:15 **Optical characterization / M. A. Yurkin**

- Patrick G. Stegmann, Benjamin T. Johnson, and Ping Yang, *Sensitivity of aerosol refractive index to particle composition and component index uncertainties* (15 min)
- Feng Xu, Gerard van Harten, David J. Diner, Oleg Dubovik, and Yoav Schechner, *Progress on inversion algorithm development for multi-angle polarimetric aerosol retrievals using AirMSPI* (15 min)
- Franz M. Schnaiter and Emma P. Järvinen, *Bridging the knowledge gap between light scattering and microphysics on single atmospheric ice crystals* (15 min)
- Matthew J. Berg, Ramesh Giri, Yuli Heinson, Osku Kemppinen, Ryan Mersmann, Jesse Laning, Steve Holler, and Gorden Videen, *Advances in digital holography of aerosol particles* (15 min)
- Andrey V. Romanov, Valeri P. Maltsev, and Maxim A. Yurkin, *Assessing particle non-sphericity from the Fourier spectrum of its light-scattering pattern* (15 min)
- Alexander E. Moskalensky and Aleksey Yu. Vorob'ev, *Self-organized micellae with UV-light triggered fluorescence turn-on* (15 min)
- Vikas Goel, Sumit K. Mishra, Ajit S. Ahlawat, Prashant Kumar, T. D. Senguttuvan, Chhemendra Shrama, and Jeffrey S. Reid, *Effect of internal structure of aerosol on particle optics* (15 min)

10:15–10:45 Coffee break

10:45–12:00 **Optical characterization / E. P. Järvinen**

- (*Invited review*) Timo A. Nieminen, Anatolii V. Kashchuk, Isaac C. D. Lenton, Halina Rubinsztein-Dunlop, and Alexander B. Stilgoe, *Direct optical measurement of force and torque in optical tweezers* (30 min)
- Dilan Avsar, Hakan Ertürk, and M. Pinar Mengüç, *Plasmonic responses of metallic/dielectric core-shell nanoparticles on a dielectric substrate* (15 min)
- Jouni I. Peltoniemi, Nataliya Zubko, Juha Suomalainen, Teemu Hakala, Maria Gritsevich, Lei Yan, Siyuan Liu, Zhongqiu Sun, and Jiao Ziti, *New desktop goniopolarimeter at FGI and joint measurement efforts* (15 min)
- Zhenzhu Wang, Dong Liu, Anatoli Borovoi, Chenbo Xie, and Yingjian Wang, *Properties of aerosols and clouds from lidar and radar soundings: experiment and theory* (15 min)

12:00–13:30 Lunch / **Meeting of the QJSRT Editorial Board**

13:30–15:30 **Multiple scattering and radiative transfer / A. Penttilä**

- Dmitri Schebarchov, Walter R. C. Somerville, Baptiste Auguié, and Eric C. Le Ru, *Light scattering by collections of metallic spheroids* (15 min)
- Janna M. Dlugach and Michael I. Mishchenko, *Multiple scattering of polarized light by particles in an absorbing host medium* (15 min)
- Juris Freimanis and Romāns Peženkovs, *Monte Carlo code and modelling of polarized radiative transfer in the envelopes of post-AGB objects* (15 min)
- A. N. Kondrat'ev, A. V. Andriyash, S. E. Kuratov, and D. B. Rogozkin, *Application of multiple scattering theory to Doppler velocimetry of ejecta from shock-loaded samples* (15 min)
- Alexey A. Shcherbakov, *Scattering matrix of semi-infinite scattering media* (15 min)
- Timo Väisänen, Julia Martikainen, Antti Penttilä, and Karri Muinonen, *Improving the radiative transfer approximation in the geometric optics regime* (15 min)

- Christian Peest, Oliver Reich, and Lena Bressel, *Development of a flexible and fast Monte Carlo radiative transfer code for photon density wave spectroscopy* (15 min)
- Guanglang Xu, Antti Penttilä, Maria Gritsevich, Jouni Peltoniemi, and Karri Muinonen, *Radiative transfer in plane-parallel media using spherical wavelets* (15 min)

15:30–16:00 Coffee break

16:00–17:45 **Astrophysical applications** / J. M. Dlugach

- Karri Muinonen, Timo Väisänen, Julia Martikainen, Johannes Markkanen, Antti Penttilä, Maria Gritsevich, Jouni Peltoniemi, Jürgen Blum, Joonas Herranen, Gordon Videen, Göran Maconi, Petteri Helander, Ari Salmi, Ivan Kassamakov, and Edward Haeggström, *Scattering of light in planetary regoliths: theory, experiments, and applications* (15 min)
- Johannes Markkanen and Jessica Agarwal, *Numerical solution for scattering, absorption, and emission by large cometary dust particles* (15 min)
- A. Penttilä, T. Väisänen, J. Markkanen, J. Martikainen, J. Escobar-Cerezo, T. Kohoutc, G. Videen, and K. Muinonen, *Space-weathering spectra explained with light scattering simulations* (15 min)
- Jessica A. Arnold, Alycia J. Weinberger, Gordon Videen, and E. Zubko, *The application of realistic dust grain shapes to debris disk photometry* (15 min)
- Julia Martikainen, Timo Väisänen, Antti Penttilä, and Karri Muinonen, *Surface composition of (4) Vesta by modelling light scattering* (15 min)
- Selina-Barbara Gerig, Raphael Marschall, Olga J. Pinzón Rodriguez, Nicolas Thomas, and the OSIRIS team, *Light scattering by dust particles in the innermost coma of comet 67P/Churyumov-Gerasimenko: synthetic images from numerical simulations in comparison with Rosetta OSIRIS data* (15 min)
- Gazi A. Ahmed, Manash J. Boruah, and Ankur Gogoi, *Light scattering studies of composite interstellar dust analogues using computer simulation and laboratory setup* (15 min)

17:45–18:45 **ELS business meeting**

## Friday, June 14

8:30–10:15 **Electromagnetic theory** / M. P. Mengüç

- Alexander A. Konoshonkin, Anatoli G. Borovoi, Natalia V. Kustova, Victor A. Shishko, and Dmitriy N. Timofeev, *Physical optics method for solving light scattering problem for large particles over all scattering directions* (15 min)
- R. Lee Panetta, Ping Yang, Jiachen Ding, Michael Mishchenko, and Siyao Zhai, *Demonstration of an overlap range of size parameters for reliable exact and approximate methods of computing single-particle scattering optical properties* (15 min)
- Shuai Hu, Taichang Gao, Lei Liu, and Ming Chen, *A parallelized Pseudo Spectral Time Domain Model for the light scattering simulation for aerosol particles with irregular shapes and inhomogeneous compositions* (15 min)
- Yongxing Li, Jingsong Yang, J. C. Shi, and Yang Du, *An update on the extended advanced IEM for scattering from randomly rough surfaces* (15 min)
- Tan Qu, Zhensen Wu, Qingchao Shang, Jiaji Wu, and Zhengjun Li, *Electromagnetic scattering by heterogeneous anisotropic structure of high-order Bessel vortex beam* (15 min)
- Ningning Song, Renxian Li, Jiaming Zhang, Shu Zhang, Han Sun, and Bojian Wei, *Optical force on a Mie particle by an Airy light-sheet using generalized Lorenz–Mie theory* (15 min)
- Jiajie Wang, Le Zhu, and Yiping Han, *Photonic jets generated by a spherical particle excited by a shaped beam* (15 min)

10:15–10:45 Coffee break

10:45–12:00 **Atmospheric remote sensing** / S. Korkin

- *(Invited review)* Oleg Dubovik, Pavel Litvinov, Tatyana Lapyonok, Fabrice Ducos, Xin Huang, David Fuertes, Anton Lopatin, Yevgeny Derimian, Cheng Chen, Lei Li, Benjamin Torres, Yana Karol, Milagros Herrera, Jacques Descloitres, Stefan Amberger, Andreas Hangler, Michael Aspetsberger, and Christian Federspiel, *Retrieval of aerosol properties from multi-angular POLDER polarimetric observations* (30 min)
- Jing Li and Chong Li, *Diurnal variability of aerosol type and vertical distribution and its implication for satellite aerosol remote sensing* (15 min)
- Chamara Rajapakshe and Zhibo Zhang, *A practical way to detect and quantify the 3D radiative effects in passive cloud property retrievals: theoretical basis and feasibility study* (15 min)
- Bingqi Yi and Qing Luo, *Preliminary exploration of radiative properties of mixed-phase clouds* (15 min)

12:00–13:30 Lunch

13:30–15:15 **Miscellaneous topics in EM scattering / R. Ceolato**

- Huajiao Yang and Zhen Hu, *Computing one-way edge modes in gyromagnetic photonic crystals by Dirichlet-to-Neumann maps* (15 min)
- Lijun Yuan, *Unidirectional reflectionless property of periodic structures with PT-symmetry* (15 min)
- Shu Zhang, Renxian Li, Jiaming Zhang, Bojian Wei, Ningning Song, and Han Sun, *Metasurface based generation of an Airy beam* (15 min)
- Wangtao Lu and Guanghui Hu, *Time-harmonic acoustic scattering from a non-locally perturbed trapezoidal surface* (15 min)
- Azadeh Didari and M. Pinar Mengüç, *Bio-inspired structures for radiative cooling applications* (15 min)
- Chen Zhou, *Contribution of weak localization to lidar returns from atmospheric particles* (15 min)
- Yuanyuan Wang and Weijun Li, *Optical properties of soot particles influenced by mixing structure* (15 min)

15:15–15:45 Coffee break

15:45–17:15 **Miscellaneous topics in EM scattering / Wangtao Lu**

- Haipeng Li, Yingchun Wu, Norbert Riefler, Thomas Wriedt, Xuecheng Wu, and Lutz Mädler, *Preliminary investigation on single isolated burning droplet using digital in-line holography* (15 min)
- Zhen Wang, Shengcheng Cui, Zhibo Zhang, Jun Yang, Haiyang Gao, and Feng Zhang, *Theoretical extension of universal forward and backward Monte Carlo radiative transfer modeling for passive and active polarization observation simulations* (15 min)
- T. M. Melo, D. R. Viana, W. A. Moura-Melo, J. M. Fonseca, and A. R. Pereira, *Propagation of electromagnetic radiation in a slab waveguide with topological insulator walls* (15 min)
- Chenchong Zhang, William R. Heinson, Jingkun Jiang, and Rajan K. Chakrabarty, *3-D tomographic morphology of soot aggregates from coal combustion and associated optical properties* (15 min)
- Huanhuan Shen, Lingyuan Wu, Yanglong Li, and Weiping Wang, *Two dimensional shape retrieval from interferometric out-of-focus images of non-spherical particles* (15 min)
- Linglong Wang, Yingchun Wu, and Xuecheng Wu, *Measuring formation of a vapor bubble around a heated nanoparticle and size of nanoparticles by holography* (15 min)

17:15 **Planning for future**

17:45 **Farewell party**