

A. Peer-reviewed scientific articles (353 articles)

A1. In journals (257):

1. **Muinonen**, K. (1989). Scattering of light by crystals: a modified Kirchhoff approximation. *Applied Optics* **28**, 3044–3050.
2. **Muinonen**, K., Lumme, K., Peltoniemi, J. I., and Irvine, W. M. (1989). Light scattering by randomly oriented crystals. *Applied Optics* **28**, 3051–3060.
3. Peltoniemi, J. I., Lumme, K., **Muinonen**, K., and Irvine, W. M. (1989). Scattering of light by stochastically rough particles. *Applied Optics* **28**, 4088–4095.
4. Avanesov, G. A., Bonev, B. I., Kempe, F., Bazilevsky, A. T., Boycheva, V., Chikov, K. N., Danz, M., Dimitrov, D., Duxbury, T., Gromatikov, P., Halmann, D., Head, J., Heifets, V. N., Kolev, V., Kostenko, V. I., Kottsov, V. A., Krasavtsev, V. M., Krasikov, V. A., Krumov, A., Kuzmin, A. A., Losev, K. D., Lumme, K., Mishev, D. N., Möhlmann, D., **Muinonen**, K., Murav'ev, V. M., Murchie, S., Murray, B., Neumann, W., Paul, L., Petkov, D., Petuchova, I., Pössel, W., Rebel, B., Shkuratov, Yu. G., Simeonov, S., Smith, B., Totev, A., Uzunov, Yu., Fedotov, V. P., Weide, G.-G., Zapfe, H., Zhukov, B. S., and Ziman, Ya. L. (1989). Television observations of Phobos. *Nature* **341**, 585–587.
5. **Muinonen**, K., Lumme, K., and Peltoniemi, J. I. (1990). Scattering of light by crystals: a possible application to planetary dust. *Advances in Space Research* **10**:3–4, (3)189–(3)192.
6. Peltoniemi, J. I., Lumme, K., and **Muinonen**, K. (1990). Scattering of light by stochastically rough particles with application to interplanetary dust and planetary regoliths. *Advances in Space Research* **10**:3–4, (3)185–(3)188.
7. Avanesov, G. A., Bonev, B. I., Kempe, F., Bazilevsky, A. T., Boycheva, V., Weide, G.-G., Gromatikov, P., Duxbury, T., Danz, M., Dimitrov, D., Zhukov, B. S., Ziman, Ya. L., Kolev, V., Kostenko, V. I., Kottsov, V. A., Lumme, K., Möhlmann, D., Murchie, S., Mishev, D. N., **Muinonen**, K., Murav'ev, V. M., Murray, B., Neumann, W., Paul, L., Pössel, W., Petkov, D., Petuchova, I., Rebel, B., Simeonov, S., Smith, B., Totev, A., Uzunov, Yu., Fedotov, V. P., Halmann, D., Head, J., Heifets, V. N., Zapfe, H., Chikov, K. N., and Shkuratov, Yu. G. (1990). Television pictures of Phobos — first results. *Pis'ma v Astronomicheskii Zhurnal* **16**, 378–388. (*Soviet Astronomy Letters* **16**:2, 160–164.)
8. Avanesov, G. A., Zhukov, B. S., Ziman, Ya. L., Kostenko, V. I., Murav'ev, V. M., Fedotov, V. P., Bonev, B. I., Mishev, D. N., Petkov, D., Krumov, A., Simeonov, S., Boycheva, V., Uzunov, Yu., Kempe, F., Rebel, B., Weide, G.-G., Halmann, D., Neumann, W., Petuchova, I., Pössel, W., Head, J., Murchie, S., Lumme, K., **Muinonen**, K., Peltoniemi, J. I., Duxbury, T., Murray, B., Herdenhoff, K., Fanale, F., Irvine, W. M., and B. Smith (1991). Results of TV imaging of Phobos (Experiment VSK–FREGAT). *Planetary and Space Science* **39**:1/2, 281–296.
9. **Muinonen**, K., Lumme, K., Zhukov, B., and Irvine, W. M. (1991). Slope variations on the surface of Phobos. *Planetary and Space Science* **39**:1/2, 327–334.
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11. **Muinonen**, K. O., Sihvola, A. H., Lindell, I. V., and Lumme, K. A. (1991). Scattering by a small object close to an interface. II: Study of backscattering. *Journal of the Optical Society of America A* **8**, 477–482.
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- Astronomy and Astrophysics* **242**, 513–520.
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 - 20. Macke, A., Mishchenko, M. I., Muinonen, K., and Carlson, B. (1995). Scattering of light by large nonspherical particles: ray tracing approximation versus T-matrix method. *Optics Letters* **20**, 1934–1936.
 - 21. Muinonen, K. (1996). Light scattering by Gaussian random particles. *Earth, Moon, and Planets* **72**:1–3, 339–342.
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 86. Tyynelä, J., Nousiainen, T., Göke, S., and **Muinonen**, K. (2008). Modeling polarization radar echoes of hydrometeors using discrete-dipoles approximation. In *11th Electromagnetic and Light Scattering Conference, Extended Abstracts* (September 7-12, 2008, University of Hertfordshire, Hatfield, U.K.) 267-270.
 87. **Muinonen**, K., Parviainen, H., Näränen, J., and Videen, G. (2008). Scalar approximation to coherent backscattering by spherical media. In *11th Electromagnetic and Light Scattering Conference, Extended Abstracts* (September 7-12, 2008, University of Hertfordshire, Hatfield, U.K.) 185-188.
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 95. **Muinonen**, K., Penttilä, A., Grön, J., Cellino, A., Wang, X., and Tanga, P. (2019). Asteroid proper phase curves from Gaia photometry. In *Proceedings of ESLAB #53 Symposium: The Gaia Universe*, J. H. J. de Bruijne, Ed., ESA/ESTEC, Noordwijk, The Netherlands, 8-12 April 2019, 4 pp., doi:10.5281/zenodo.3236431.

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100. **Muinonen**, K., and Markkanen, J. (2023). Scattering by compact particles using surface integral equations. In *Light, Plasmonics, and Particles*, Elsevier, 17 pp.

C. Scientific books (monographs) (9)

1. **Muinonen**, K. (1990). Light scattering by inhomogeneous media: backward enhancement and reversal of linear polarization. PhD-thesis, Report 3/1990, Observatory and Astrophysics Laboratory, University of Helsinki.
2. **Muinonen**, K., Kokko, M., Pohjolainen, S., and Hakala, P., Eds. (1990). Proceedings of the Finnish Astronomical Society 1990, 1–40, Observatory, University of Helsinki (ISBN 951-95898-0-5).
3. **Muinonen**, K., and Forsström, V., Eds. (1995). Proceedings of the Finnish Astronomical Society 1995 : abstracts for the annual meeting of the Society, May 15, 1995. Helsinki, Observatory and Astrophysics Laboratory, 1995 ISBN 951-95898-1-3.
4. Lumme, K., Hovenier, J. W., **Muinonen**, K., Rahola, J., and Laitinen, H., Eds. (1997). Workshop on light scattering by non-spherical particles, Observatory, University of Helsinki, Finland, June 9-11, 1997. Helsinki : University of Helsinki, 1997
5. Vilhu, O., Hackman, T., Isaksson, E., Muhli, P., **Muinonen**, K., and Väisänen, P., Eds. (2000). VIII Suomen avaruustutkijoiden Cospar-kokous: Kokousohjelma ja esitysten tiivistelmät, Helsinki-Tukholma-Helsinki 25.-27.9.2000. Report 2/2000, Observatory, University of Helsinki.
6. **Muinonen**, K., Penttilä, A., Lindqvist, H., Nousiainen, T., and Videen, G., Eds. (2010). Electromagnetic and Light Scattering XII, Conference Proceedings (University of Helsinki, Finland), 1-347 (ISBN 978-952-10-6374-9 and 978-952-10-6375-6 for electronic version).
7. **Muinonen**, K., Videen, G., Nousiainen, T., Zubko, E., and Penttilä, A., Eds., (2011). Electromagnetic and Light Scattering by Nonspherical Particles XII, *Journal of Quantitative Spectroscopy and Radiative Transfer* **112**, Special Issue, Elsevier.
8. **Muinonen**, K., Penttilä, A., Granvik, M., Virkki, A., Fedorets, G., Wilkman, O., and Kohout, T., Eds. (2014). Asteroids, Comets, Meteors 2014, Book of Abstracts (University of Helsinki, Finland), 1-637 (ISBN 978-952-10-8962-6).

9. **Muinonen**, K., Granvik, M., Penttilä, A., and Gritsevich, M., Eds. (2015). Asteroids, Comets, Meteors, and their Interrelations. *Planetary and Space Science* **118**, Special Issue, Elsevier.
10. **Muinonen**, K., Granvik, M., Penttilä, A., and Gritsevich, M., Eds. (2016). Asteroids, Comets, Meteors, and their Interrelations. *Planetary and Space Science* **123**, Special Issue, Elsevier.

D. Publications intended for professional communities

E. Publications intended for general public (19)

1. **Muinonen**, K. (1989). Phoboksen kuvaus alkoi — ja loppui. *Tähdet ja Avaruus* **3/89**, 115.
2. **Muinonen**, K. (1994). Helminauhakomeetta nokesi Jupiterin kaasukehää. *Tähdet ja Avaruus* **5/94**, 4–6.
3. **Muinonen**, K. (1994). NEOt tähtääimeen. *Tiede 2000* **7/94**, 36–41.
4. **Muinonen**, K. (1995). Wirtasesta Rosettan kivi. *Tähdet ja Avaruus* **1/95**, 6.
5. **Muinonen**, K. (1995). Kosmiset törmäykset — erilainen riski. *Tietoaika* **4/1995**, 8–9.
6. **Muinonen**, K. (1995). Miksi täysikuu on kirkas? *Tähdet ja Avaruus* **3/95**, 12–15.
7. **Muinonen**, K. (1995). Hale–Boppin komeetta höyryää jo. *Tähdet ja Avaruus* **5/95**, 4.
8. **Muinonen**, K., and Piironen, J. (1995). Superkomeetan paluu. *Suomen Kuvalahti* **39**, 44–47.
9. **Muinonen**, K. (1995). Asteroidit ja komeetat Maan kiusankappaleina. *Mitä, Missä, Milloin 1996*, 390–393 (Otava, Helsinki).
10. **Muinonen**, K. (1996). Tulipalloja Amazonasilla elokuussa 1930. *Tähdet ja Avaruus* **1/96**, 5.
11. **Muinonen**, K. (1997). Komeetat. *Tähdet ja Avaruus* **1/97**, 15–18.
12. **Muinonen**, K. (1998). Miljardin vuoden ennuste. *Tähdet ja Avaruus* **6/98**, 18–22.
13. **Muinonen**, K. (1999). Vaarallinen asteroidi AN10. *Tähdet ja Avaruus* **4/99**, 20–21.
14. **Muinonen**, K. (1999). Törmäilevät asteroidit. *Tieteessä tapahtuu* **7**, 25–28.
15. **Muinonen**, K. (2000). Törmäysuhka. *Avaruusuutiset* **3**, 6–7 .
16. Vilhu, O., **Muinonen**, K., Sandell, H., and Stigell, P. (2000). Seminaari Silja Serenadella. *Avaruusuutiset* **4**, 11–13.
17. **Muinonen**, K. (2003). Asteroidien törmäykset Maahan ja avaruusalusten vierailut asteroideilla. *Tiede ja muutos – aaveet ja haaveet* (J. Rydman, Ed.) (Tieteellisten seurain valtuuskunta), 294–308.
18. **Muinonen**, K., and Torppa, J. (2003). Planeettakunnan kappaleiden muotokirjoa. *Maan muoto* (M. Poutanen, Ed.) (Tähtitieteellinen yhdistys URSA), 166–171.
19. Brown, A., Lindegren, L., Kontizas, M., Turon, C., and **Muinonen**, K. (2008). Report on the ELSA School on the Science of Gaia. In *The Messenger* **131**, 50.
20. **Muinonen**, K. (2019). Suuri Carte du Ciel -tähtivalokuvausohjelma. In *Markkasen galaksit. Tapio Markkanen in memoriam* (Osmo Pekonen and Johan Stén, Es.), Tähtitieteellinen yhdistys Ursaa, Ursan julkaisuja 163, 97–109.

F. Public artistic and design activities (0)

G. Theses

1. **Muinonen, K.** (1986). Klassinen sähkömagneettinen sironta epäsäännöllisistä hiukkasista (Classical electromagnetic scattering by irregular particles). MSc–thesis, University of Helsinki.
2. **Muinonen, K.** (1990). Light scattering by inhomogeneous media: backward enhancement and reversal of linear polarization. PhD–thesis, Report 3/1990, Observatory and Astrophysics Laboratory, University of Helsinki.

H. Patents and invention disclosures (2)

Patent No. 196 10 438 in Germany entitled “Verfahren und Vorrichtung zur Bestimmung der Lichtabsorption eines beliebig geformten Partikels” by Dr. Christian Sasse, Dr. Karri **Muinonen**, Mr. Jukka Piironen, and Mr. Hermann Spegassner, 1998 November 26.

Patent No. US 7 920 262 B2 in the U.S.A. entitled “Systems for measuring backscattered light using rotating mirror” by Dr. Gorden W. Videen and Prof. Karri O. **Muinonen**, 2011 April 5

Patent application FP300035FI entitled “Device and method for acoustic levitation” by, in alphabetical order, Dr. Maria Gritsevich, Prof. Edward Haeggström, Mr. Petteri Helander, Dr. Ivan Kassamakov, Mr. Göran Maconi, Prof. Karri **Muinonen**, Dr. Antti Penttilä, Mr. Tuomas Puranen, and Dr. Ari Salmi, filed on 2018 April 14

Invention Disclosure “Device for accurate measurement of Mueller matrix elements for scattering by small samples” by, in alphabetical order, Dr. Maria Gritsevich, Prof. Edward Haeggström, Mr. Petteri Helander, Dr. Ivan Kassamakov, Mr. Göran Maconi, Prof. Karri **Muinonen**, Dr. Antti Penttilä, Mr. Tuomas Puranen, and Dr. Ari Salmi, 2017

Invention Disclosure “Device for accurate measurement of single-scattering albedo for small samples” by, in alphabetical order, Dr. Maria Gritsevich, Prof. Edward Haeggström, Dr. Ivan Kassamakov, Prof. Karri **Muinonen**, and Dr. Antti Penttilä, 2017

Invention Disclosure “Maelscan - instrument for rapid in situ red-blood-cell malaria-parasite screening” by, in alphabetical order, Dr. Maria Gritsevich, Prof. Edward Haeggström, Dr. Ivan Kassamakov, Dr. Johannes Markkanen, Prof. Karri **Muinonen**, and Dr. Antti Penttilä, 2017

I. Audiovisual material, ICT software (14)

1. **Muinonen, K.** (1993). Popular talk: Asteroidit ja komeetat — putoaako taivas niskaamme (Asteroids and comets — is the sky falling)? Porthania, University of Helsinki, 1993 Sept. 21.
2. **Muinonen, K.** (1994). Popular talk: Komeetta Shoemaker-Levy 9 törmäsi ja tyrmäsi (Comet Shoemaker-Levy 9 impact and knock-out). Porthania, University of Helsinki, 1994 Sept. 20.
3. **Muinonen, K.** (1995). Tape recording: Helminauhakomeetta Shoemaker–Levy törmäsi ja tyrmäsi. University of Helsinki.
4. **Muinonen, K.** (1997). Popular talk: Komeetat — mistä ne tulevat (Comets, where do

they come from). Balder Hall, 1997 March 18.

5. **Muinonen**, K. (2003). Popular talk: Asteroidien törmäykset Maahan ja avaruusalusten vierailut asteroideilla (Asteroid impacts on the Earth and space mission visits to asteroids). *Tieteen päivät*, January 8-12, 2003.
6. **Muinonen**, K. (2003). Popular talk: Asteroideja siellä, asteroideja täällä (Asteroids here and there). *Avaruusnäyttely 2003*, October 30 - November 2, 2003.
7. **Muinonen**, K. (2004). Popular talk: Kuu eilen, tänään ja huomenna (The Moon yesterday, today, and tomorrow). Kirkkonummi, January 13, 2004.
8. **Muinonen**, K. (2009). Popular talk: Aurinkokunnan synnystä (Solar System Evolution), *Tieteen päivät*, Helsinki, Finland, January 7, 2009.
9. **Muinonen**, K. (2011). Popular talk: Aurinkokunnan synty ja kehitys (Solar System formation and evolution). Kirkkonummi, January 18, 2011.
10. **Muinonen**, K. (2012). Popular talk: Aurinkokunnan kehitys (Solar System Evolution). *Kansainvälinen avaruusviikko (International Space Week)*. Heureka, Vantaa, Finland, October 6, 2012.
11. **Muinonen**, K. (2015). Popular talk: Aurinkokuntien synty, eksoplaneetat (Formation of Solar Systems, Exoplanets), *Tieteen päivät*, Helsinki, Finland, January 7, 2015.
12. **Muinonen**, K. (2015). Popular talk: Aurinkokuntien synty, eksoplaneetat (Formation of Solar Systems, Exoplanets), *Tieteen päivät*, Rovaniemi, Finland, September 12, 2015.
13. **Muinonen**, K. (2017). Popular talk: Asteroiditrymykset (Asteroid impacts), *Asteroidi-piv (Asteroid Day)*, Helsinki Observatory, June 30, 2017.
14. **Muinonen**, K. (2017). Popular talk: Tähtitiedettä läheltä ja kaukaa Gaia-avaruusluotaimella (Astronomy near and far using the Gaia space mission). Kirkkonummi, May 9, 2017.
15. **Muinonen**, K. (2018). Popular talk: Aurinkokunta (The Solar System). Suna Primary School, Espoo, February 12, 2018.
16. **Muinonen**, K. (2019). Popular talk: Tähtitiedett Gaia-avaruusteleskoopilla (Astronomy with the Gaia space telescope). Jyväskylä, March 9, 2019.
17. **Muinonen**, K. (2019). Popular talk: Apollo 11. In *European Researchers' Night*, University of Helsinki, September 27, 2019.
18. **Muinonen**, K. (2020). Popular talk: Tähtitiedett Gaia-avaruusteleskoopilla (Astronomy with the Gaia space telescope). Mikkeli, April 28, 2020.

J. Invited talks (48)

1. Lumme, K., and **Muinonen**, K. (1990). Phase effects: theoretical aspects. *28th Plenary Meeting of COSPAR*, 115 (The Hague, The Netherlands) (Presented by K. Lumme).
2. **Muinonen**, K., and Lupishko, D. F. (1993). Light scattering by solar system dust: does the theory explain the observations? *IAU Symposium 160: Asteroids, Comets, Meteors 1993*, 225 (Belgirate, Italy) (Presented by K. **Muinonen**). See publication 2.6 above.
3. **Muinonen**, K. (1995). Spaceguard Survey for near-Earth objects. *Progress in European Astrophysics, Joint European and National Astronomy Meeting, Abstracts*, 139 (Catania, Italy). See publication 2.12 above.
4. **Muinonen**, K., and Milani, A. (1996). Determination of eigenorbits for asteroids and comets. *IAU Colloquium 165, Dynamics and Astrometry of Natural and Artificial Celestial Bodies*, 79 (Poznan, Poland) (Presented by K. **Muinonen**). See publication 2.14 above.
5. Carusi, A., Isobe, S., Marsden, B. G., **Muinonen**, K., Shoemaker, E. M., and Steel, D.

- I. (1996). Rendezvous with the Spaceguard Foundation. *IAU Colloquium 165, Dynamics and Astrometry of Natural and Artificial Celestial Bodies*, 26 (Poznan, Poland) (Presented by K. Muinonen).
6. Carusi, A., Isobe, S., Marsden, B. G., **Muinonen**, K., Shoemaker, E. M., and Steel, D. I. (1996). Announcing the Spaceguard Foundation. *COSPAR Colloquium 10: Asteroids, Comets, Meteors 1996*, 2 (Versailles, France) (Presented by A. Carusi).
 7. **Muinonen**, K. (1996). Discovery of Tunguska-sized bodies in the Spaceguard Survey. *International Workshop Tunguska'96*, 25 (Bologna, Italy). See publication 1.28 above.
 8. **Muinonen**, K. (1997). Searching for near-Earth objects. *NATO Advanced Study Institute, The Dynamics of Small Bodies in the Solar System: A Major Key to Solar System Studies* (1997 June 29 – July 12, Acquafrredda di Maratea, Italy). See publications 2.18-19 above.
 9. **Muinonen**, K. (1997). The Earth-impact hazard of near-Earth objects. *NATO Advanced Study Institute, The Dynamics of Small Bodies in the Solar System: A Major Key to Solar System Studies* (1997 June 29 – July 12, Acquafrredda di Maratea, Italy). See publications 2.18-19 above.
 10. **Muinonen**, K. (1998). Light scattering by stochastically shaped particles. In *Conference on Light Scattering by Nonspherical Particles: Theory, Measurements, and Applications* (NASA Goddard Institute for Space Studies, New York, NY, USA). See publication 2.20 above.
 11. **Muinonen**, K., Virtanen, J., and Bowell, E. (2000). Collision probability for Earth-crossing asteroids. In *Abstracts, US-European Celestial Mechanics Workshop* (July 3–7, 2000, Adam Mickiewicz University, Poznan, Poland), 43. See publication 1.53 above. (Presented by K. Muinonen)
 12. **Muinonen**, K., Virtanen, J., Kaasalainen, M., and Laakso, T. (2001). Collision probability computation using Bayesian probabilities. In *International Workshop on Collaboration and Coordination Among NEO Observers and Orbital Computers, Abstracts* (October 23–26, 2001, Kurashiki City Art Museum, Kurashiki, Okayama, Japan), 26. See publication 6.34 above. (Presented by K. Muinonen).
 13. **Muinonen**, K. (2002). Light-scattering approximations for small irregular particles. In *International Conference on Electromagnetics and Light Scattering by Nonspherical Particles* (March 4-8, 2002, University of Florida, Gainesville). See publication 2.32 above.
 14. **Muinonen**, K. (2002). Coherent backscattering by absorbing and scattering media. In *International Conference on Electromagnetics and Light Scattering by Nonspherical Particles* (March 4-8, 2002, University of Florida, Gainesville). See publication 2.33 above.
 15. **Muinonen**, K. (2004). Physical characterization of asteroid regoliths using photometric and polarimetric observations. In *35th COSPAR Scientific Assembly*, Paris, France, 18-25 July, 2004.
 16. **Muinonen**, K., Virtanen, J., Granvik, M., and Laakso, T. (2004). Asteroid orbits with Gaia. In *Three-Dimensional Universe with Gaia* (4-7 October 2004, Paris, France). See publication 6.42 above. (Presented by K. Muinonen)
 17. Videen, G., Shkuratov, Y., Zubko, E., Petrov, D., Sun, W., Nousiainen, T., **Muinonen**, K., Voshchinnikov, N., and Il'in, V. (2005). Modeling irregular aerosols and their scattered light. In *8th Conference on Electromagnetic and Light Scattering by Nonspherical Particles* (Salobrena, Granada, Spain, May 16-20, 2005). See publication 2.45 above. (Presented by G. Videen)
 18. **Muinonen**, K. (2005). Multiple-scattering modeling for asteroid photometry and polarimetry. In *AOGS 2005, Asia Oceania Geosciences Society, 2nd Annual Meeting* (Sin-

- gapore, June 20-24, 2005), 58-PS-A0678.
19. **Muinonen**, K. (2006). Small-body surface exploration by remote observations. In *2nd Post-Launch Workshop of the Philae Science Team* (Helsinki, September 4-6, 2006).
 20. Barucci, M. A., Yoshikawa, M., Koschny, D., Michel, P., Kawaguchi, J., Yano, H., Brucato, J., Dotto, E., Franchi, I., Boehnhardt, H., Green, S., Josset, J.-L., **Muinonen**, K., Oberst, J., Agnolon, D., and Romstedt, J. (2008). Marco Polo; Near-Earth object sample return mission. *European Geosciences Union, General Assembly, Vienna, April 13-18, 2008.* (Presented by M. A. Barucci)
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