

# Prof. Åke Nordlund: Publicationlist

## Refereed publications 2005-2010

1. Lunttila T., Padoan P., Juvela M., Nordlund . 2009: "The Super-Alfvnic Model of Molecular Clouds: Predictions for Mass-to-Flux and Turbulent-to-Magnetic Energy Ratios", *Astrophysical Journal* 702, L37-L41
2. Wedemeyer-Bhm S., Lagg A., Nordlund . 2009: "Coupling from the Photosphere to the Chromosphere and the Corona", *Space Science Reviews* 144, 317-350
3. Nordlund ., Stein R. F., Asplund M. 2009: "Solar Surface Convection", *Living Reviews in Solar Physics* 6, 2-
4. Nordlund . 2008: "Stellar (magneto-)convection", *Physica Scripta Volume T* 133, 014002-
5. Lunttila T., Padoan P., Juvela M., Nordlund . 2008: "The Super-Alfvnic Model of Molecular Clouds: Predictions for Zeeman Splitting Measurements", *Astrophysical Journal* 686, L91-L94
6. Gustafsson B., Edvardsson B., Eriksson K., Jrgensen U. G., Nordlund ., Plez B. 2008: "A grid of MARCS model atmospheres for late-type stars. I. Methods and general properties", *Astronomy and Astrophysics* 486, 951-970
7. Scharmer G. B., Nordlund ., Heinemann T. 2008: "Convection and the Origin of Evershed Flows in Sunspot Penumbrae", *Astrophysical Journal* 677, L149-L152
8. Braun D. C., Birch A. C., Benson D., Stein R. F., Nordlund . 2007: "Helioseismic Holography of Simulated Solar Convection and Prospects for the Detection of Small-Scale Subsurface Flows", *Astrophysical Journal* 669, 1395-1405
9. Heinemann T., Nordlund ., Scharmer G. B., Spruit H. C. 2007: "MHD Simulations of Penumbra Fine Structure", *Astrophysical Journal* 669, 1390-1394
10. Agertz O., Moore B., Stadel J., Potter D., Miniati F., Read J., Mayer L., Gawryszczak A., Kravtsov A., Nordlund ., Pearce F., Quilis V., Rudd D., Springel V., Stone J., Tasker E., Teyssier R., Wadsley J., Walder R. 2007: "Fundamental differences between SPH and grid methods", *Monthly Notices of the Royal Astronomical Society* 380, 963-978
11. Archontis V., Dorch S. B. F., Nordlund . 2007: "Nonlinear MHD dynamo operating at equipartition", *Astronomy and Astrophysics* 472, 715-726
12. Boley A. C., Durisen R. H., Nordlund ., Lord J. 2007: "Three-Dimensional Radiative Hydrodynamics for Disk Stability Simulations: A Proposed Testing Standard and New Results", *Astrophysical Journal* 665, 1254-1267
13. Padoan P., Nordlund ., Kritsuk A. G., Norman M. L., Li P. S. 2007: "Two Regimes of Turbulent Fragmentation and the Stellar Initial Mass Function from Primordial to Present-Day Star Formation", *Astrophysical Journal* 661, 972-981
14. Zhao J., Georgobiani D., Kosovichev A. G., Benson D., Stein R. F., Nordlund . 2007: "Validation of Time-Distance Helioseismology by Use of Realistic Simulations of Solar Convection", *Astrophysical Journal* 659, 848-857
15. Georgobiani D., Zhao J., Kosovichev A. G., Benson D., Stein R. F., Nordlund . 2007: "Local Helioseismology and Correlation Tracking Analysis of Surface Structures in Realistic Simulations of Solar Convection", *Astrophysical Journal* 657, 1157-1161
16. Samadi R., Georgobiani D., Trampedach R., Goupil M. J., Stein R. F., Nordlund . 2007: "Excitation of solar-like oscillations across the HR diagram", *Astronomy and Astrophysics* 463, 297-308
17. Whitworth A., Bate M. R., Nordlund ., Reipurth B., Zinnecker H. 2007: "The Formation of Brown Dwarfs: Theory", *Protostars and Planets V* 459-476

18. De Pontieu B., Carlsson M., Stein R., Rouppe van der Voort L., Lfdahl M., van Noort M., Nordlund ., Scharmer G. 2006: "Rapid Temporal Variability of Faculae: High-Resolution Observations and Modeling", *Astrophysical Journal* 646, 1405-1420
19. Stein R. F., Nordlund . 2006: "Solar Small-Scale Magnetoconvection", *Astrophysical Journal* 642, 1246-1255
20. Braithwaite J., Nordlund . 2006: "Stable magnetic fields in stellar interiors", *Astronomy and Astrophysics* 450, 1077-1095
21. Heinemann T., Dobler W., Nordlund ., Brandenburg A. 2006: "Radiative transfer in decomposed domains", *Astronomy and Astrophysics* 448, 731-737
22. Peter H., Gudiksen B. V., Nordlund . 2006: "Forward Modeling of the Corona of the Sun and Solar-like Stars: From a Three-dimensional Magnetohydrodynamic Model to Synthetic Extreme-Ultraviolet Spectra", *Astrophysical Journal* 638, 1086-1100
23. Brandenburg A., Chan K. L., Nordlund ., Stein R. F. 2005: "Effect of the radiative background flux in convection", *Astronomische Nachrichten* 326, 681-692
24. Dintrans B., Brandenburg A., Nordlund ., Stein R. F. 2005: "Spectrum and amplitudes of internal gravity waves excited by penetrative convection in solar-type stars", *Astronomy and Astrophysics* 438, 365-376
25. Samadi R., Goupil M.-J., Alecian E., Baudin F., Georgobiani D., Trampedach R., Stein R., Nordlund . 2005: "Excitation of Solar-like Oscillations: From PMS to MS Stellar Models", *Journal of Astrophysics and Astronomy* 26, 171-
26. Hededal C. B., Haugblle T., Frederiksen J. T., Nordlund . 2005: "In situ particle acceleration in collisionless shocks", *Nuovo Cimento C Geophysics Space Physics C* 28, 411-
27. Gudiksen B. V., Nordlund . 2005: "Erratum: An AB Initio Approach to the Solar Coronal Heating Problem", *Astrophysical Journal* 623, 600-600
28. Gudiksen B. V., Nordlund . 2005: "Erratum: ``An AB Initio Approach to Solar Coronal Loops", *Astrophysical Journal* 623, 597-599
29. Padoan P., Kritsuk A., Norman M. L., Nordlund . 2005: "A Solution to the Pre-Main-Sequence Accretion Problem", *Astrophysical Journal* 622, L61-L64
30. Gudiksen B. V., Nordlund . 2005: "An AB Initio Approach to Solar Coronal Loops", *Astrophysical Journal* 618, 1031-1038
31. Gudiksen B. V., Nordlund . 2005: "An Ab Initio Approach to the Solar Coronal Heating Problem", *Astrophysical Journal* 618, 1020-1030
32. Nordlund . 2005: "Old and New Paradigms for Planet Formation", *Protostars and Planets V* 8618-

### **Non-refereed publications 2005-2010**

1. Nishikawa K. -, Niemiec J., Medvedev M., Zhang B., Hardee P., Mizuno Y., Nordlund A., Frederiksen J., Sol H., Pohl M., Hartmann D. H., Fishman J. F. 2009: "Simulation of relativistic shocks and associated radiation", *ArXiv e-prints arXiv:0912.1583-*
2. Brandenburg A., Nordlund A. 2009: "Astrophysical turbulence", *ArXiv e-prints arXiv:0912.1340-*
3. Stein R. F., Lagerfjard A., Nordlund A., Geogobiani D., Benson D. 2009: "Solar Magneto-Convection Simulations of Emergin Flux", *AGU Fall Meeting Abstracts* 5-
4. Nordlund A. ?, Stein R. F. 2009: "Accurate Radiation Hydrodynamics and MHD Modeling of 3-D Stellar Atmospheres", *American Institute of Physics Conference Series* 1171, 242-259
5. Nordlund A. 2009: "Solar Twins and Possible Solutions of the Solar and Jupiter Abundance Problems", *ArXiv e-prints arXiv:0908.3479-*
6. Padoan P., Nordlund A. 2009: "The Star Formation Rate of Supersonic MHD Turbulence", *ArXiv e-prints arXiv:0907.0248-*

7. Nishikawa K. -, Niemiec J., Medvedev M., Zhang B., Hardee P., Nordlund A., Frederiksen J., Mizuno Y., Sol H., Pohl M., Hartmann D. H., Oka M., Fishman G. J. 2009: "Radiation from relativistic shocks with turbulent magnetic fields", ArXiv e-prints
8. arXiv:0906.5018-
9. Stein R. F., Lagerfjard A., Nordlund A., Benson D., Georgobiani D., Schaffenberger W. 2009: "Solar Magneto-Convection Simulations", AAS/Solar Physics Division Meeting 40, #04.01-
10. Georgobiani D., Zhao J., Kosovichev A. G., Benson D., Stein R. F., Nordlund A. 2009: "Simulated Large Scale Solar Convection Versus Observations: A Multiwavelength Approach", AAS/Solar Physics Division Meeting 40, #03.01-
11. Nordlund A., Scharmer G. B. 2009: "Convection and the Origin of Evershed Flows", ArXiv e-prints arXiv:0905.0918-
12. Nishikawa K.-I., Medvedev M., Zhang B., Hardee P., Niemiec J., Nordlund ., Frederiksen J., Mizuno Y., Sol H., Fishman G. J. 2009: "Radiation from relativistic jets in turbulent magnetic fields", American Institute of Physics Conference Series 1133, 235-237
13. Stein R. F., Georgobiani D., Schafenberger W., Nordlund ., Benson D. 2009: "Supergranulation Scale Convection Simulations", American Institute of Physics Conference Series 1094, 764-767
14. Nishikawa K.-I., Hardee P., Niemiec J., Mizuno Y., Medvedev M., Zhang B., Sol H., Nordlund A., Fredrikksen J., Lyubarsky Y., Hartmann D., Fishman J. 2009: "Microscopic Processes On Radiation From Accelerated Particles In Relativistic Jets", Bulletin of the
15. American Astronomical Society 41, 383-
16. Thompson M. J., Balogh A., Culhane J. L., Nordlund ., Solanki S. K., Zahn J.-P. .%. %. T. O., Dynamics Of Solar Magnetism: S. S. S. O. I., Volume 32. Isbn 978-1-4419-0238-2. Spring Er New York, 2009 2009: "The Origin and Dynamics of Solar Magnetism",
17. Unknown
18. Collet R., Nordlund ., Asplund M., Hayek W., Trampedach R. 2009: "Abundance analysis of the halo giant HD 122563 with three-dimensional model stellar atmospheres", Memorie della Societa Astronomica Italiana 80, 719-
19. Kosovichev A. G., Arlt R., Bonanno A., Brandenburg A., Brun A. S., Busse F., Dikpati M., Hill F., Gilman P. A., Nordlund A., Ruediger G., Stein R. F., Sekii T., Stenflo J. O., Ulrich R. K., Zhao J. 2009: "Solar Dynamo and Magnetic Self-Organization",
20. astro2010: The Astronomy and Astrophysics Decadal Survey 2010, 160-
21. Nishikawa K.-I., Niemiec J., Sol H., Medvedev M., Zhang B., Nordlund ., Frederiksen J., Hardee P., Mizuno Y., Hartmann D. H., Fishman G. J. 2008: "New Relativistic Particle-In-Cell Simulation Studies of Prompt and Early Afterglows from GRBs", American
22. Institute of Physics Conference Series 1085, 589-593
23. Stein R. F., Nordlund A., Georgobiani D., Benson D., Schaffenberger W. 2008: "Supergranulation Scale Connection Simulations", ArXiv e-prints arXiv:0811.0472-
24. Frederiksen J. T., Haugblle T., Nordlund A. ?. 2008: "Trans-Debye Scale Plasma Modeling & Stochastic GRB Wakefield Plasma Processes", American Institute of Physics Conference Series 1054, 87-97
25. Megeath S. T., Li Z.-Y., Nordlund A. 2008: "The Formation of Distributed and Clustered Stars in Molecular Clouds", ArXiv e-prints arXiv:0801.0492-
26. Nishikawa K. I., Mizuno Y., Hardee P., Sol H., Medvedev M., Zhang B., Nordlund ., Frederiksen J. T., Fishman G. J., Preece R. 2008: "Radiation from relativistic jets", Blazar Variability across the Electromagnetic Spectrum
27. Stein R. F., Benson D., Georgobiani D., Nordlund A. ., Schaffenberger W. 2007: "Surface Convection", Unsolved Problems in Stellar Physics: A Conference in Honor of Douglas Gough 948, 111-115

28. Stein R. F., Benson D., Nordlund A. 2007: "Solar Magneto-Convection Simulations", *New Solar Physics with Solar-B Mission* 369, 87-
29. Stein R. F., Benson D., Georgobiani D., Nordlund . 2007: "Application of convection simulations to oscillation excitation and local helioseismology", *IAU Symposium* 239, 331-342
30. Stein R. F., Nordlund A. 2007: "Realistic Solar Convection Simulations", *Bulletin of the American Astronomical Society* 38, 125-
31. Zhao J., Georgobiani D., Kosovichev A. G., Benson D., Stein R. F., Nordlund A. 2007: "Validating Time-Distance Helioseismology by Use of Realistic Simulations of Solar Convection", *Bulletin of the American Astronomical Society* 38, 124-
32. Braun D., Birch A. C., Benson D., Stein R. F., Nordlund A. 2007: "Helioseismic Holography of Simulated Solar Convection and Prospects for the Detection of Small-Scale Subsurface Flows", *Bulletin of the American Astronomical Society* 38, 124-
33. Padoan P., Nordlund ., Kritsuk A. G., Norman M. L., Li P. S. 2007: "The mass distribution of unstable cores in turbulent magnetized clouds", *IAU Symposium* 237, 283-291
34. Nordlund . 2006: "The Future: Where are We Headed", *Solar MHD Theory and Observations: A High Spatial Resolution Perspective* 354, 353-
35. Georgobiani D., Stein R. F., Nordlund . 2006: "Spatial and Temporal Spectra of Solar Convection", *Solar MHD Theory and Observations: A High Spatial Resolution Perspective* 354, 109-
36. Benson D., Stein R., Nordlund . 2006: "Supergranulation Scale Convection Simulations", *Solar MHD Theory and Observations: A High Spatial Resolution Perspective* 354, 92-
37. Boley A. C., Durisen R. H., Nordlund A., Lord J. 2006: "A Test Suite for 3D Radiative Hydrodynamics Simulations of Protoplanetary Disks", *Bulletin of the American Astronomical Society* 38, 995-
38. Stein R. F., Benson D., Georgobiani D., Nordlund . 2006: "Supergranule scale convection simulations", *Proceedings of SOHO 18/GONG 2006/HELAS I, Beyond the spherical Sun* 624,
39. Stein R. F., Benson D., Nordlund A. 2006: "Solar supergranulation-scale simulations", *IAU Joint Discussion* 17,
40. Benson D., Stein R. F., Nordlund A. 2006: "Supergranulation-Scale Simulations of the Solar Convection Zone", *Bulletin of the American Astronomical Society* 38, 256-
41. Georgobiani D., Zhao J., Kosovichev A. G., Benson D., Stein R. F., Nordlund A. 2006: "Time-Distance and Correlation Tracking Analyses of Convective Structures using Realistic Large-Scale Simulations of Solar Convection", *Bulletin of the American Astronomical Society* 38, 224-
42. Society 38, 224-
43. Whitworth A., Bate M. R., Nordlund A., Reipurth B., Zinnecker H. 2006: "PPV Chapter - The Formation of Brown Dwarfs", *ArXiv Astrophysics e-prints arXiv:astro-ph/0602367-*
44. Gudiksen B. V., Nordlund A. 2006: "Coronal dynamics and heating theories", *36th COSPAR Scientific Assembly* 36, 3545-
45. Georgobiani D., Zhao J., Benson D., Stein R. F., Kosovichev A. G., Nordlund A. 2005: "Time-distance analysis of realistic simulations of solar convection", *AGU Fall Meeting Abstracts* A1117-
46. Peter H., Gudiksen B. V., Nordlund A. 2005: "Coronal Heating Through Braiding of Magnetic Field Lines Synthesized Coronal EUV Emission and Magnetic Structure", *Chromospheric and Coronal Magnetic Fields* 596,
47. Busk Hededal C., Nordlund . 2005: "Gamma-Ray Burst Synthetic Spectra from Collisionless Shock PIC Simulations", *ArXiv Astrophysics e-prints arXiv:astro-ph/0511662-*
48. Peter H., Gudiksen B. V., Nordlund . 2005: "EUV Emission from a 3D MHD Coronal Model: Temporal Variability in a Synthesized Corona", *Solar Wind 11/SOHO 16, Connecting Sun and Heliosphere* 592, 527-
49. Bingert S., Peter H., Gudiksen B., Nordlund A. 2005: "The Structure of the Base of the Corona", *Solar Wind 11/SOHO 16, Connecting Sun and Heliosphere* 592, 471-

50. Nordlund . 2005: "Collisionless Shocks: Dynamics and Synthetic Spectra", KITP Program: Physics of Astrophysical Outflows and Accretion Disks
51. Benson D., Stein R., Nordlund A. 2005: "Supergranulation Scale Solar Convection Simulations", AGU Spring Meeting Abstracts 5-
52. Peter H., Gudiksen B. V., Nordlund A. 2005: "Tackling the coronal heating problem using 3D MHD coronal simulations with spectral synthesis", 13th Cambridge Workshop on Cool Stars, Stellar Systems and the Sun 560, 59-
53. Haugboelle T., Hededal C. B., Frederiksen J. T., Nordlund A. 2005: "Collisionless Plasma Shocks. Field Generation and Particle Acceleration", ArXiv Astrophysics e-prints arXiv:astro-ph/0503332-
54. Hededal C. B., Trier Frederiksen J., Haugboelle T., Nordlund A. 2005: "Magnetic Field Generation and Electron Acceleration in Collisionless Shocks", Neutrinos and Explosive Events in the Universe 211-
55. Stein R., Georgobiani D., Trampedach R., Ludwig H.-G., Nordlund . 2005: "Excitation of P-Modes in the Sun and Stars", Highlights of Astronomy 13, 411-
56. Padoan P., Nordlund . 2005: "The stellar IMF as a property of turbulence", The Initial Mass Function 50 Years Later 327, 357-
57. Padoan P., Kritsuk A., Michael, Norman L., Nordlund . 2005: "Brown dwarfs from turbulent fragmentation", Memorie della Societa Astronomica Italiana 76, 187-