Wien, April 6th 2024

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Invited conference talks since 1998

Invited plenary talks at international conferences

1. 8/7–13/7 2004: Keynote speaker at International Astronomical Union (IAU) Symposium 224, in Poprad, Slovakia, on 10/7 2004: *Convection in stars*. In addition, I had been invited to join the conference SOC.

2. 8/8–12/8 2004: Invited review at ASOS8 (International Colloquium on Atomic Spectra and Oscillator Strengths), Department of Physics, University of Wisconsin, Madison, Wisconsin, USA, on 10/8 2004: *Some physics we can learn from spectroscopy of A type stars*. Review in a session honouring the 70th birthday of Prof. C.R. Cowley, University of Michigan, Ann Arbor, Michigan, USA.

3. 6/6–10/6 2005: Invited review at MONS 2005 "Element stratification in stars, 40 years of atomic diffusion" in Chateau de Mons, France, on 9/6 2005: *Direct simulations of radiative/convective zones*. This conference was organized to honour the 65th birthday of Prof. Georges Michaud, University of Montreal, Canada.

4. 3/8–14/8 2009: Invited review: *3D Stellar Atmospheres for Stellar Structure Models and Asteroseismology* on 11/8 2009 at Joint Discussion 10 "3D view on cool stellar atmospheres: theory meets observation" at the XXVII IAU (International Astronomical Union) General Assembly, Rio de Janeiro, Brasil.

5. 19/8–23/8 2019: Keynote speaker at "Stars and Space 2019", University of Vienna, Austria, on 20/8 2019: *3D Hydrodynamical Simulations of Stellar Convection for Helio- and Asteroseismology*. Full conference title: "Stars and their Varibility, Observed from Space — Celebrating the 5th Anniversary of BRITE-Constellation."

6. 26/6–30/6 2023: Invited review: *Recent Theoretical Advances about Core Overshooting and Convective Penetration from a Convective Envelope* on 30/6 2023 at the *Plato Stellar Science Conference 2023* in Milazzo, Italy.

Invited talks at international conferences

1. 15/3–19/3 1998: Participation in the 189th WE-Heraeus-Seminar ("Finite Element Methoden Workshop") in Bad Honnef, Germany. Invited talk on

18/3 1998: *Sparse Grid Spectral Methods for the Numerical Solution of Partial Differential Equations.*

2. 20/7–23/7 1998: Participation in the 11th International Conference on Domain Decomposition Methods, Greenwich University, London, England. Invited talk at the minisymposium "Sparse Grid Methods", organized as part of the conference, on 21/7 1998: *Sparse Grid Spectral Methods and some Results from Approximation Theory.*

3. 30/9–2/10 1998: Participation in *Theory and Tests of Convection in Stellar Structure. First Granada Workshop* in Granada, Spain. Invited talk on 1/10 1998: *Computing solar and stellar overshooting with turbulent convection models. First tests of a fully non-local model.*

4. 31/5–4/6 1999: Participation in the workshop *The treatment of convection in stellar atmospheres*, Observatoire de Paris-Meudon, France. Invited talk on 2/6 1999: *Turbulent convection models and their application to stars. A critical review.*

5. 25/10–29/10 1999: Participation in the *CARTUM Autumn School* at JRC in Ispra, Italy. Invited talk on 25/10 1999: *Modern one-point closure models: moment equations for turbulent convection and their comparison with numerical simulations.*

6. 19/11–21/11 1999: Invited talk at the "12th National Conference of Yugoslav Astronomers and International Workshop on the Development of Astronomical Databases" in Belgrade, Yugoslavia, on 19/11 1999: 1) *The Hydrodynamic Moment Equations – An Alternative Treatment for Stellar Convection* followed by a second invited talk on 20/11 1999: 2) *VALD – The Vienna Atomic Line Database: A Survey.*

7. *COROT/SWG/Milestone 2000 Meeting* (25/09–27/09 2000) in Paris, France: 3 invited talks: 1) On 25/09 2000: *TEMPLOGG - determination of stellar parameters* 2) and again on 25/09 2000: *Convection models based on the Reynolds stress approach: some results for delta Scuti type stars and the necessity for testing them through asteroseismology.*, and finally 3) also on 25/09 2000: *Comparison of convection models with numerical simulations.* Talks 2 and 3 were related to each other, but had been splitted for two sessions and had been given separate subtitles.

8. 15/06–20/06 2002: Participation at *IAU Symposium 210* in Uppsala, Sweden. Invited talk on 18/06 2002: *Nonlocal convection models for stellar atmospheres and envelopes.*

9. 27/11–1/12 2002: *International Conference on magnetic fields in O, B and A stars: Origin and connection to Pulsation, Rotation and Mass loss*, Mmabatho, South Africa. Invited talk on 27/11 2002: *Convection in A stars.*

10. 18/4–22/4 2005: (Invited) talk at the "Ringberg Workshop on Interdisciplinary Aspects of Turbulence" at Ringberg Castle, Lake Tegernsee, Germany, on 22/4 2005: *Turbulent convection in astrophysics and geophysics: a comparison.* I have also been in the SOC of that conference and also worked as its main local organizer.

11. 6/4–11/4 2008: Invited talk at IAU Symposium 252 "The Art of Modelling Stars in the 21st Century" in Sanya, China, on 11/4 2008: *Shear Driven Turbulence and Coherent Structures in Solar Surface Simulations.*

12. 6/6–10/6 2011: Invited talk at the *8th Serbian Conference on Spectral Line Shapes in Astrophysics* in Divčibare, Serbia, on 7/6 2011: *VAMDC as a resource for atomic and molecular data and the new release of VALD.*

13. 25/2–26/2 2012: Invited talk at the *Workshop on Nano-IBCT data base development* in Vienna, Austria, on 25/2 2012: *VAMDC Project.*

14. *Regional Workshop on Atomic and Molecular Data* (14/06–16/06 2012) in Belgrade, Serbia: 2 invited talks: 1) On 15/06 2012: *The VALD Database* 2) and again on 16/06 2012: *Overview on the VAMDC Project.*

15. 13/5–17/5 2013: Invited talk at the *9th Serbian Conference on Spectral Line Shapes in Astrophysics* in Banja Koviljaca, Serbia, on 16/5 2013: *Radiation Hydrodynamical Simulations of Cepheids.*

16. 1/7–5/7 2013: Invited talk at *ASTRONUM 2013* in Biarritz, France, on 3/7 2013: *Improved time integration for WENO methods in astrophysical applications.*

17. 19/8–23/8 2013: Invited talk at IAU Symposium 301 "Precision Asteroseismology" in Wrocław, Poland, on 21/8 2013: *Pulsation–Convection Interaction.*

18. 7/10–9/10 2013: Invited talk at the workshop "Efficient solution of large systems of non-linear PDEs in science" in Lyon, France, on 8/10 2013 or 9/10 2013: *Implicit–Explicit Time Integration Methods for Astrophysical Applications.*

19. 26/11–28/11 2013: Invited talk at the international conference "Turbulence and wave processes" dedicated to the centenary of Mikhail D. Millionshchikov (1913–1973), in Moscow, Russia, on 27/11 2013: *Modelling of Coherent Structures in Turbulent Convection.*

20. 23/5–24/5 2016: Invited talk at the PLATO WP120 meeting 2016 in Meudon, France, on 24/5 2016: *Constraints on T–τ Laws from 3D Models.*

21. 3/10–7/10 2016: Invited talk at the SCORe16 workshop in Aarhus, Denmark, on 5/10 2016: *On some misconceptions when carrying out and evaluating numerical simulations of stellar convection.*

22. 12/6–14/6 2019: Invited talk at the minisymposium "Multi-Dimensional Fully Compressible, Time Implicit Simulations of Hydrodynamical Processes in Stars" during the PASC19 conference at ETH Zürich, Switzerland, on 12/6 2019: *Computational Challenges of Numerical Simulations of Convection inside Stars.*

23. 1/7–5/7 2019: Invited talk at *ASTRONUM 2019* in Paris, France, on 3/7 2019: *The ANTARES code: recent developments and applications.*

24. 18/11–22/11 2019: Invited talk at *PLATO STESCI Workshop III* in Barcleona, Spain, on 21/11 2019: *Surface Convection Models.*

25. 23/8–27/8 2021: Invited talk at the *13th Serbian Conference on Spectral Line Shapes in Astrophysics* at the Univ. of Belgrade, Belgrade, Serbia, on 24/8 2021: *Improvements to the Short-Characteristics Method in 3D RHD Simulations and some Unsolved Problems in Spectral Line Shapes of A-type Stars*, delivered via Cisco Webex during virtual participation.

26. 16/10–19/10 2023: Invited talk at the *Workshop "Beyond Boussinesq for Astrophysical and Geophysical fluids: Numerical tools and experiments of the future"*, at the ENS Lyon, France, on 16/10 2023: *The Challenge of Numerical Simulations of Convection*, followed by a second talk, jointly with (and in replacement of) F. Zaussinger on 17/10 2023: *Compressible Double-Diffusive Convection.*

Invited lecture series at scientific schools

1. 1/10–5/10 2018: Invited lecturer at the Evry Shatzman School 2018 (organized by the CNRS) in Roscoff, France. Four-part lecture series on 1/10–4/10 2018: *Thermal Convection in Stars and in Their Atmosphere.*

Other invited talks since 1998

Invited talks and interviews as short-listed candidate for faculty positions

1. Nordita, Copenhagen, Denmark (Assistant Professorship in Theoretical Astrophysics; 3+3 years). Invited talk on 5/2 2003: *Modelling and Simulations of Turbulence in Astrophysics.*

2. Keele University, Staffordshire, England (Lectureship in Astrophysics; permanent). Invited talk on 9/1 2007: *Solar and Stellar Convection. Modelling, numerical simulations, and observational probes.*

3. Hamburger Universitätssternwarte, Universität Hamburg, Germany (W2 Professorship in Computational Astrophysics; permanent). Invited talk on 30/7 2009: *High Resolution Simulations of Turbulent Convection in Stars.*

4. Department of Physics and Astronomy, Uppsala University, Sweden (Senior Lectureship in Astronomy, especially Numerical Astrophysics; permanent). Invited talk on 24/10 2014: *Numerical Astrophysics.* First-ranked candidate after test lecture, research presentation, and job interview (as announced on 27/10 2014). With *"In light of changed economic circumstances"* given as a reason, the recruitment was cancelled by a decision of the Head of Department made on 17/11 2014.

5. CNRS, Paris, France (Directeur de recherche de deuxième classe, DR2; permanent). Invited talk on 11/3 2016: *The Modelling of Convection and its Interaction in Stars and Planets.*

6. IAG, Universität Göttingen, Germany (scientific staff position). After interview and presentation definitive offer of an E14 position obtained on 21/3 2017 and accepted on 24/3 2017.

7. BTU Cottbus-Senftenberg, Germany (Full Professorship (W3) in Numerical Mathematics and Scientific Computing). Interview, test lecture, and invited talk on 23/6 2017: *Turbulent Convection in Astrophysics: Numerical Modelling and Applications.* Third-ranked candidate after completion of recruitment.

Invited talks as a guest at universities and research institutes

1. Invited talk at Techn. Univ. München, Germany, Inst. f. Informatik on 3/2 1998: *Spektralmethoden auf dünnen Gittern zur Lösung partieller Differentialgleichungen.*

2. Uppsala Astronomical Observatory, Sweden, invited seminar talk on 16/7 1998: *Convection in Stars.*

3. Keele University, Staffordshire, England, invited seminar talk on 24/7 1998: *Convection in Stars.*

4. Tata Inst. of Fundamental Research (TIFR), Mumbai (Bombay), India, invited seminar talk on 24/11 1998: *Modelling stellar convection with the hydrodynamic moment equations.*

5. Astronomical Observatory, Univ. of Uppsala, Sweden: Invited talk on 3/2 2000: *Modelling of turbulent convection – the hydrodynamic moment equations in comparison with numerical simulations.*

6. Enrico Fermi Institute of the University of Chicago, USA: Invited talk on 10/7 2000: *Non-local models for turbulent convection.*

7. University of Western Ontario, London, Ontario, Canada: Invited talk on 17/7 2000: *Non-local models for turbulent convection.*

8. Yale University, New Haven, Connecticut, USA: Invited talk at the Astronomy Department on 19/7 2000: *Modeling turbulent convection in stars.*

9. Inst. of Astronomy, Univ. of Cambridge, England: Invited talk on 27/2 2001: 1) *Reynolds stress models for stellar convection.* Because of interest in this work a second seminar talk was spontaneously given on 2/3 2001 named: 2) *The Canuto-Dubovikov Convection Model from ApJ 493, 834-847 (1998).*

10. Max-Planck-Institute for Astrophysics, Garching bei München, Germany: Invited talk on 13/12 2001: *Fully non-local models of convection: tests with numerical simulations and their application to A-star envelopes.*

11. Observatoire de Meudon, France: Invited talk on 27/2 2002: 1) *Fully non-local models of convection: tests with numerical simulations and their application to A-star envelopes.* On a specific requests a second seminar talk was held on 28/2 2002 titled: 2) *The Canuto-Dubovikov Convection Model from ApJ 493, 834-847 (1998)*, a repetition of the talk given at Cambridge the year before.

12. Case Western Reserve University, Cleveland, USA: Invited talk on 3/4 2002: *Fully non-local models of convection: their necessity, tests with numerical simulations, and an application to A-star envelopes.*

13. Institute d'Astrophysique, Paris, France: Invited talk at an IAP seminar on 1/10 2002: *Convection treatments in stellar atmospheres and envelopes - their influence on stellar structure and evolution calculations.*

14. Observatoire de Meudon, France: Invited talk in a GEPI seminar on 3/10 2002: *Line variations and line blanketing in cool CP stars.*

15. Oxford University, England: Invited talk (formal seminar talk) at the Dept. of Physics, Astrophysics Sub-Department, on 28/1 2003: *Convection in stars: its importance in understanding observational data, the challenge of its modelling and recent progress in its theory and numerical simulations.*

16. Observatoire Midi-Pyrénées, Toulouse, France: Invited talk on 20/3 2003: *Fully non-local models of convection: tests with numerical simulations and application to stellar structure calculations.*

17. ENS Lyon, France: Invited talk on 21/3 2003: *Stellar convection: its unaltered importance to astrophysics and some recent progress in its modelling.*

18. Univ. of Central Lancashire, Preston, England: Invited seminar talk on 2/4 2003: *Convection in stars: observational facts and modelling techniques.*

19. Univ. of St. Andrews, Scotland, UK: Invited seminar talk on 18/8 2003: *Modelling and numerical simulations of stellar convection.*

20. Keele University, Staffordshire, England: Invited seminar talk on 22/8 2003: *Stellar convection: observations and modelling techniques.*

21. Observatoire de Meudon, France: Invited talk in the LUTH hydrodynamics seminar on 24/3 2004: *Coherent Structures and Turbulent Convection.*

22. Alfred-Wegener-Institute Bremerhaven, Germany: Invited talk on 3/5 2004: *Convection in stellar astrophysics and in geophysics – a comparison.*

23. Zentrum für Modellierung und Simulation, FB Mathematik, Universität Hamburg, Germany, on 6/5 2004: *Reynolds stress models for convection in astrophysical problems.*

24. Institut für Astronomie und Astrophysik, Universität Tübingen, Germany, on 22/11 2004: *Modelling Stellar Convection - Effects of Non-locality and Coherent Structures.*

25. Universitätssternwarte München, Universität München, Germany, on 19/1 2005: *Non-locality and Coherent Stuctures in Models of Stellar Convection.*

26. Colloquium at the Institute for Astronomy of the Universität Wien, Austria, on 22/1 2007: *The role of coherent structures in models and numerical simulations of stellar convection.*

27. Alfred-Wegener-Institute Bremerhaven, Germany: Invited talk on 2/9 2011: *Double-Diffusive Convection: a Common Interest of Astrophysicists and Oceanographers.*

28. Max-Planck-Institute for Astrophysics, Garching bei München, Germany: Invited talk on 27/10 2011: *Hydrodynamical Simulations of Stellar Convection with ANTARES.*

29. Max-Planck-Institute for Astrophysics, Garching bei München, Germany: Invited talk on 10/10 2012: 1) *Realistic numerical simulation of convection and pulsation in Cepheids: techniques and applications.* And during the same visit another invited talk was given on 11/10 2012: 2) *Modern operator splitting techniques for the efficient numerical time integration of the hydrodynamical equations.*

30. Department of Physics, Universität Graz, Austria: Invited talk on 13/10 2013: *The Role of Double–Diffusive Convection for the Interior Structure of Giant Planets.*

31. IRAP, Obs. de Midi-Pyrénées, Toulouse, France: Invited talk on 18/6 2015: *Numerical simulations of convection with ANTARES.*

32. Max-Planck-Institute for Solar System Research, Göttingen, Germany: Invited talk at "MPS Seminar" on 7/10 2015: *Numerical Simulation Modelling of Convection and Pulsation.*

33. Institute for Astrophysics, Universität Göttingen, Germany: Invited talk at the "Institute Seminar" on 27/10 2016: *Pitfalls and Challenges in Numerical Simulations of Stellar Convection.*

34. Max-Planck-Institute for Solar System Research, Göttingen, Germany: Invited talk at "MPS Seminar" on 4/7 2017: *Realistic Numerical Simulations of Convective Overshooting in a DA White Dwarf.*

35. Colloquium at the Institute for Astrophysics of the Universität Wien, Austria, in the Vienna Astrophysics Colloquium series on 26/4 2021: *Advanced Convection Modelling in Asteroseismology and Stellar Evolution.* Invited talk, delivered via Zoom.

36. Instituto de Astrofísica de Canarias (IAC), Spain, on 7/7 2021: *Improvements in Numerical and Analytical Modelling Techniques to Study the Solar Surface.* Invited talk, delivered via Zoom.

37. BRITE Zoom Meeting series, on 16/5 2023: *Non-local Models of Convective Core Overshooting in A- and B-type Stars.* Invited talk, delivered via Zoom.

Invited seminar talks at the employing institute

This refers to talks in seminar series which are primarily intended for visitors from abroad, but occasionally also present speakers from their own institution. Talks given in purely "inhouse seminar series" are not included in this list.

1. Colloquium at the Institute for Mathematics of the Universität Wien, Austria, on 15/4 1998: *Numerische Lösung partieller Differentialgleichungen mit Spektralmethoden auf dünnen Gittern.*

2. Colloquium at the Institute for Astronomy of the Universität Wien, Austria, on 29/11 1999: *Modelling turbulent convection – the moment equations in comparison with numerical simulations.*

3. Colloquium at the Institute of Mathematics of the Universität Wien, Austria, on 16/1 2002: *Arbeiten zur Turbulenztheorie und deren Anwendung in der stellaren Astrophysik.*

4. Invited talk in the formal seminar series of the Astronomy Unit, Queen Mary, University of London, England, on 24/1 2003: *Turbulence Theory in Stars.*

5. Invited talk at the "Joint Helioseismology Seminar" at Queen Mary, University of London, England (joint series at IoA Cambridge, Queen Mary College London, and Imperial College London), on 15/9 2003: *Non-local models of turbulent convection: a status report.*

6. Institute for Astrophysics, Universität Göttingen, Germany: Invited talk at the "Institute Seminar" on 17/5 2018: *Hydrodynamical Modelling of the Interaction between Convection and Pulsation in Stars.*

7. MPI for Solar System Research, Göttingen, Germany: Invited talk at the "Institute Seminar" on 14/5 2019: *Insights on Solar p-mode Damping Rates from a 3D Hydrodynamical Simulation.*

8. Wolfgang-Pauli-Institute, Vienna, Austria: Invited talk on 13/7 2022: *Numerical Simulation of A-type and White Dwarf Stars.*

Invited public lectures

1. Public Lecture during the first Austrian "Science Week" on 20/5 2000: *KONVEKTION – Energietransport in Sternen.*