CV of Priv.-Doz. MMag. Dr. *Tanja Rindler-Daller* June 2023

Affiliation: Wolfgang Pauli Institut (WPI), Oskar-Morgenstern-Platz 1, 1090 Vienna, Austria
and
Universität Wien, Fakultät für Geowissenschaften, Geographie und Astronomie,
Institut für Astrophysik, Universitätssternwarte Wien,
Türkenschanzstrasse 17, 1180 Vienna, Austria

Positions:

01/2023 – 12/2026: Single-Investigator Award, Wolfgang Pauli Institut Vienna
Orbits and Vorticity in Quantum Wave Dark Matter, P 36331-N
grant: 331.758,00 € (supported by the Austrian Science Fund FWF)

09/2018 – 08/2022: Elise Richter Prize Fellow, Inst. f. Astrophysik, Univ. of Vienna
Cosmology and Structure Formation of Scalarfield Dark Matter, V656-N28,
grant: 369.243,00 € (supported by the FWF)

05/2016 – 04/ 2018: Lise Meitner Fellow, Inst. f. Astrophysik, Univ. of Vienna
The Nature of Dark Matter and Structure Formation, M2008-N36,
grant: 161.220,00 € (supported by the FWF)

03/2016 – 01/2021: Lectureships (Lehraufträge), Univ. Vienna

09/2013 – 08/2015: Research Fellow at the Dept. of Physics, Univ. of Michigan, Ann Arbor, USA
(supported by the U.S. Department of Energy)

01/2010 – 08/2013: Postdoctoral Fellow at the Dept. of Astronomy, Univ. of Texas, Austin, USA
(supported by the Texas Cosmology Center, NASA and U.S. National Science Foundation)

12/2007 – 12/2009: Postdoctoral Fellow at the Inst. f. Theoretische Physik, Univ. of Cologne, Germany
(supported by the Deutsche Forschungsgemeinschaft DFG)

04/2004 – 01/2007: Doctoral student position (supported by FWF), Inst. f. Theoretische Physik, Univ. Vienna

11/2001 – 09/2002: Diploma student position (part-time, supported by FWF) , Inst. f. Astronomie, Univ. Vienna

07/2001 – 09/2001: Industry internship at Siemens AG Austria

Academic degrees (conferred by University of Vienna):

Nov. 2021: Habilitation (venia docendi) in Astronomy
(as the third woman in this field in the history of Univ. Vienna),
Habilitationsschrift: „Theoretical Studies on Cosmological Dark Matter“

Feb. 2007: Dr.rer.nat. in Theoretical Physics with honors
subject area: quantum statistical physics and field theory, Advisor: Jakob Yngvason
Thesis: „Contributions to the Theory of Vortices in Rotating Bose-Einstein-Condensates“, 139 p.

June 2006: Mag.rer.nat. in Physics with honors
subject area: experimental crystal growth/solid-state physics and statistical physics
(conducted in parallel to doctoral study in theoretical physics), Advisor: Armin Fuith
Thesis: „Growth of NaCl and CsCl Single Crystals in Solution and Gel Media“, 53 p.

Dec. 2002: Mag.rer.nat. in Astronomy with honors
subject area: galactic dynamics and extragalactic astronomy, Advisor: Werner Zeilinger
Thesis: „Spherical Models for Galaxies with Particular Consideration of Cuspy Mass Densities“, 124 p.

Oct. 1998: enrollment as Astronomy and Physics major at Univ. of Vienna

Research:

cosmology, galactic dynamics and celestial mechanics, stellar evolution, statistical physics, quantum hydrodynamics, atomic and solid-state physics, crystal growth

Publications:

(for updates and metrics, see SAO/NASA ADS link on my webpage https://homepage.univie.ac.at/tanja.rindler-daller/)

(preprint, under review)

H. Foidl, T. Rindler-Daller, W.W.Zeilinger: *Halo formation and evolution in SFDM and CDM: new insights from the fluid approach*, subm. to Phys.Rev.D, 26p., arXiv:2305.12982

(published, peer-reviewed)

23. T. Rindler-Daller: *On particle scattering in Gross-Pitaevskii theory and implications for dark matter halos*, Front. Astron. Space Sci. 10:1121920, 14p. (2023), arXiv:2212.05812

22. K. Pils, T. Rindler-Daller: *Orbits and adiabatic contraction in scalar field dark matter halos: revisiting the cusp-core problem in dwarf galaxies*, Mon.Not.Roy.Astron.Soc. 514, Issue 2, pp.1990-2009 (2022), arXiv:2202.12779

21. H. Foidl, T. Rindler-Daller: *Cosmological structure formation in complex scalar field dark matter versus real ultralight axions: a comparative study using CLASS*, Phys.Rev.D 105, article id.123534 (30p.) (2022), arXiv:2203.09396

20. P. R. Shapiro, T. Dawoodbhoy, T. Rindler-Daller: *Cosmological Structure Formation in Scalar Field Dark Matter with Repulsive Self-Interaction: The Incredible Shrinking Jeans Mass*, Mon.Not.Roy.Astron.Soc. 509, p.145-173 (2022), arXiv:2106.13244

19. T. Dawoodbhoy, P. R. Shapiro, T. Rindler-Daller: *Core-Envelope Haloes in Scalar Field Dark Matter with Repulsive Self-Interaction: Fluid Dynamics Beyond the de Broglie Wavelength*, Mon.Not.Roy.Astron.Soc. 506, p.2418-2444 (2021), arXiv:2104.07043

18. T. Rindler-Daller: *To observe, or not to observe, quantum-coherent dark matter in our Milky Way, that is a question*, invited review article, Front. Astron. Space Sci. Vol.8, article ID 697140 (14p.) (2021), arXiv:2104.12252

17. S.O. Schobesberger, T. Rindler-Daller, P.R. Shapiro: *Angular Momentum and the Absence of Vortices in the Cores of Fuzzy Dark Matter Haloes*, Mon.Not.Roy.Astron.Soc. 505, p.802-829 (2021), arXiv:2101.04958

16. T. Rindler-Daller, K. Freese, R.H.D. Townsend, L. Visinelli: *Stability and Pulsation of the First Dark Stars*, Mon.Not.Roy.Astron.Soc. 503, p.3677-3691 (2021), arXiv:2011.00231

15. L.E. Padilla, T. Rindler-Daller, P.R. Shapiro, T. Matos, J.A. Vásquez: *On the Core-Halo Mass Relation in Scalar Field Dark Matter Models and its Consequences for the Formation of Supermassive Black Holes*, Phys.Rev. D 103, 063012 (26p.) (2021), arXiv:2010.12716

14. T. Rindler-Daller: *Understanding CMB physics through the exploration of exotic cosmological models: a classroom study using CLASS*, Eur.J.Phys.41, 035602 (19p.) (2020), arXiv:1908.05042

13. B. Li, P.R. Shapiro, T. Rindler-Daller: *Bose-Einstein-Condensed Scalar Field Dark Matter and the Gravitational Wave Background from Inflation: New Cosmological Constraints and its Detectability by LIGO*, Phys.Rev.D 96, 063505 (43 p.) (2017), arXiv:1611.07961

12. M. Lewicki, T. Rindler-Daller, J.D. Wells: *Enabling Electroweak Baryogenesis through Dark Matter*, J. High Energy Phys. 2016, Issue 6, article id.55, (21 p.) (2016), arXiv:1601.01681

11. K. Freese, T. Rindler-Daller, D. Spolyar, M. Valluri: *Dark Stars: A Review*, Rep. on Prog. in Phys., 79, Issue 6, article id. 066902 (24 p.) (2016), invited review article, arXiv:1501.02394

10. T. Rindler-Daller, M.H. Montgomery, K. Freese, D.E. Winget, B. Paxton: *Dark Stars: Improved Models and First Pulsation Results*, Astrophys.J. 799, 210 (16 p.) (2015), arXiv:1408.2082

9. B. Li, T. Rindler-Daller, P.R. Shapiro: *Cosmological Constraints on Bose-Einstein-Condensed Scalar Field Dark Matter*, Phys.Rev.D 89, 083536 (19p.) (2014), arXiv:1310.6061

8. T. Rindler-Daller, P.R. Shapiro: *Complex Scalar Field Dark Matter on Galactic Scales*, Mod.Phys.Lett. A 29, 143002 (17 p.) (2014), invited review article, arXiv:1312.1734

7. T. Rindler-Daller, P.R. Shapiro: *Finding New Signature Effects on Galactic Dynamics to Constrain Bose-Einstein-Condensed Cold Dark Matter*, Chapter12 in Accelerated Cosmic Expansion, C.Moreno Gonzalez et al. (eds.), Astrophys. & Space Sci.Proc. 38, 163-182 (2014), arXiv:1209.1835

6. T. Rindler-Daller, P.R. Shapiro: *Angular Momentum and Vortex Formation in Bose-Einstein-Condensed Cold Dark Matter Haloes*, Mon.Not.Roy.Astron.Soc. 422, 135-161 (2012), arXiv:1106.1256

5. T. Rindler-Daller: *Analytical Galactic Models with Mild Stellar Cusps*, Mon.Not.Roy.Astron.Soc. 396, 997-1003 (2009), arXiv:0903.2755

4. T. Rindler-Daller: *Vortices in Rotating Bose-Einstein Condensates Confined in Homogeneous Traps*, Physica A 387, 1851-1874 (2008), arXiv:1404.4571

3. M. Correggi, T. Rindler-Daller, J. Yngvason: *Rapidly Rotating Bose-Einstein Condensates in Homogeneous Traps*, J. Math.Phys. 48, 102103 (17 p.) (2007), arXiv:0707.1568

2. M. Correggi, T. Rindler-Daller, J. Yngvason: *Rapidly Rotating Bose-Einstein Condensates in Strongly Anharmonic Traps*, J. Math.Phys. 48, 042104 (30 p.) (2007), arXiv:math-ph/0606058

1. T. Rindler-Daller, H. Dejonghe, W.W. Zeilinger: *Spherical Models for Early-type Galaxies with Cuspy Mass Densities*, Mon.Not.Roy.Astron.Soc. 356, 1403-1408 (2005)

(published conference proceedings)

9. B. Li, P.R. Shapiro, T. Rindler-Daller: *Complex Scalar Field Dark Matter and its Imprint on Gravitational Waves*, Proc.Frank N.Bash Symp. 2015, Proc.of Science (Bash2015) 028

8. T. Rindler-Daller, B. Li, P.R. Shapiro, M. Lewicki, J.D. Wells: *How Scalar-Field Dark Matter May Conspire to Facilitate Baryogenesis at the Electroweak Scale*, Proceedings of the DPF 2015 Meeting of the American Physical Society Division of Particles & Fields, Ann Arbor, MI, Aug.4-8, SLAC E-Conf., arXiv: 1510.08369

7. B. Li, T. Rindler-Daller, P.R. Shapiro: *Cosmological Constraints on Bose-Einstein-Condensed Scalar Field Dark Matter*, Proc.Frank N.Bash Symp. 2013, New Horizons in Astronomy, id.31 (2013)

6. T. Rindler-Daller, P.R. Shapiro: *The Impact of Cold Dark Matter Variants on the Halos of the First Stars and Galaxies: Angular Momentum and Vortex Creation in BEC Dark Matter*, Proc. Int.Conf. 'The First Stars and Galaxies: Challenges for the Next Decade', AIP Conf.Proc. 1294, p.274-275 (2010)

5. T. Rindler-Daller, P.R. Shapiro: *Vortices and Angular Momentum in Bose-Einstein-Condensed Cold Dark Matter Halos*, Proc.Frank N. Bash Symp. 2009, New Horizons in Astronomy, ASP Conf.Ser. 432, p. 244-248 (2010)

4. T. Rindler-Daller: *Analytical Galactic Models with Mild Cusps*, Proc.Int. Workshop 'Galaxy Evolution: Emerging Insights and Future Challenges', ASP Conf. Ser. 419, p.163-166 (2009)

3. T. Rindler-Daller: *Vortices in 2-Dimensional Rotating Bose-Einstein Condensates*, Proc.Int.Workshop 'Collective Phenomena in Macroscopic Systems', p.274-279, World Scientific (2007)

2. T. Rindler-Daller: *Analytical Galactic Models with Mild Central Cusps*, Proc. IAU Symp. No.235, 131, F.Combes, J.Palous Eds., Camb.Univ.Press (2007)

1. T. Daller, H. Dejonghe, W.W. Zeilinger: *Spherical Models for Early-type Galaxies with Cuspy Mass Densities*, R.Schielicke Ed., Astron. Nachr. 324, 157 (2003)

Professional service:

.) Associate Editor of „The European Physical Journal H"

Member of
.) Astronomische Gesellschaft
.) American Physical Society (Division of Astrophysics; Division of Gravitational Physics)
.) American Astronomical Society
.) Österreichische Gesellschaft für Astronomie und Astrophysik

Referee for Journals:
.) Monthly Notices of the Royal Astronomical Society
.) Europhysics Letters
.) Astroparticle Physics (one of the selected most valued reviewers of 2014)
.) Journal of Cosmology and Astroparticle Physics
.) Physics Letters B
.) The European Physical Journal C
.) Physics of the Dark Universe
.) The Astrophysical Journal
.) Astronomy & Astrophysics
.) Physical Review D

Referee for Agency/Publisher:
.) US-Israel Bi-National Science Foundation
.) Imperial College Press

Other:
.) Mittelbau representative in hiring commission „Data Science in Astrophysics" 2019, Univ. Vienna (which hired Prof.Dr. Oliver Hahn)

Other:

Software skills:
operating systems: Linux, Unix, Windows
programming languages: C/C++, Fortran, Python, Bash
codes adapted: cosmological N-body/hydro codes „Gadget2" and „RAMSES", Boltzmann code „CLASS", stellar evolution code „MESA", Lagrangian 1D hydrocodes, various Riemann solvers, various N-body simulation post-processing analysis tools
other: Maple, Mathcad, GNU graphics and computational software, VisIt, CVS, HTML, LaTex

Languages: German, English, Russian, French

Public talks and outreach:

.) Dark Stars: Evolution and First Pulsation Results
Talk and press conference (Sun, April 12th) at the
American Physical Society April Meeting 2015, Baltimore, MD, USA

.) Die Expansion des Universums und was sie uns über dessen Geschichte erzählt,
held at Outreach Evening Talk/"Nachts auf der Sternwarte" at Vienna University Observatory, June 2017,
Outreach "Astronomie-Tage", Sept.2017, and at the WAA, Oct. 2017

.) Press Office assistance during the XXXth General Assembly of the International Astronomical Union (IAU), Austria Center Vienna, Aug.2018

.) *Urknall, dunkle Materie und andere Rätsel des (frühen) Universums*, lecture at the ÖAV, Vienna,Nov.2022; lecture at the Antares-Verein, St.Pölten, April 2023

Research featured in press and popular magazines:

.) article in „New Scientist" in May 2016:
https://www.newscientist.com/article/mg23030734-400-goopy-dark-matter-could-slow-down-inflation-of-the-universe/

.) article in „Daily Mail Online" in May 2016:
https://www.dailymail.co.uk/sciencetech/article-3586781/Is-dark-matter-changing-stripes-Mysterious-invisible-material-slowed-expansion-universe.html

.) Coverstory in „Astronomy Magazine" in October 2018:
https://astronomy.com/magazine/2018/09/dark-stars-come-into-the-light

FGGA-Interview (in German):
https://fgga.univie.ac.at/en/research/research-portal-detail-view/news/der-dunklen-materie-auf-der-spur-eine-kollektive-schwingung-galaktischer-ausmasse-modellieren/?tx_news_pi1%5Bcontroller%5D=News&tx_news_pi1%5Baction%5D=detail&cHash=37578c36bf4c97e997f7366e193a652

Dimensionen (Radio Ö1, 23.7.2020): Wie groß ist das Universum ?
(Interview on the occasion of 100 yr „The Great Debate", together with Franz Kerschbaum)

Invited scientific talks:

27. Complex versus real scalar field dark matter: more than one world apart,
VII Scalar Field Dark Matter Workshop (org. Univ. Guanajuato, Mexico), online due to Cov19, 10/2022

26. Complex versus real scalar field dark matter: more than one world apart, THEP Seminar,
Indian Institute of Technology, Mumbai, India, online, May 2022

25. Scalar field dark matter with repulsive self-interaction: can it resolve the cusp-core problem in dwarf galaxies?, Seminar, Instituto Avanzado de Cosmologia, Mexico, online, Mar. 2022

24. New Results on Structure Formation in Scalar Field Dark Matter,
VI Scalar Field Dark Matter Workshop (org. Univ. Guanajuato, Mexico), online due to Cov19, Oct. 2021

23. New Results on Structure Formation in Scalar Field Dark Matter,
CLUES-2021 Workshop (org. AIP, Potsdam, Germany), online due to Cov19, July 2021

22. Cosmology of ultralight scalar field dark matter,
Vienna Theory Lunch Seminar, Uni Wien/TU Wien, March 2019

21. Structure Formation in ΛSFDM,
CLUES-2017 Workshop, La Cristalera, Spain, June 2017

20. Dark Matter as a Complex Scalar Field: New Cosmological Constraints and Detectability by LIGO,
HEP Seminar, Indian Institute of Technology, Hyderabad, India, online, March 2017

19. Scalar Field Dark Matter and Cosmological Implications,
Theory Seminar, Institut Jozef Stefan, Ljubljana, Slovenia, Oct. 2016

18. Dark Matter as a Scalar Field: Cosmological and Astrophysical Implications,
HEPHY-Seminar, Austrian Academy of Sciences, Vienna, Sept. 2016

17. Supermassive Dark Stars: a New Stellar Population at Cosmic Dawn ?,
Institutsseminar, Universitätssternwarte Wien, Univ. Vienna, Wien, Dec. 2015

16. Dark Stars, "The Spacetime Odyssee continues", Nordita Workshop, Stockholm, Sweden, June 2015

15. An Astrophysical Hunt to Uncover the Nature of Dark Matter,
HEP-Astro Seminar, Dept.of Physics, Univ. Michigan, Ann Arbor, USA, Feb. 2015

14. Dark Stars: Evolution and First Pulsation Results,
Cosmos Seminar, Dept.of Astronomy, Univ. Texas, Austin, USA, Oct. 2014

13. Cosmological Constraints on Complex Scalar-Field Dark Matter,
Perimeter Institute for Theoretical Physics, Waterloo, Canada, Feb. 2014

12. Cosmological Constraints on Scalar-Field Dark Matter after PLANCK,
Cosmology after PLANCK workshop, Michigan Center for Theoretical Physics,
Univ. Michigan, Ann Arbor, USA, Sep. 2013

11. Cosmological Constraints on Complex Scalar Field Dark Matter,
High-Energy Physics Seminar, Dep.of Physics, Univ.Michigan, Sep. 2013

10. Quantum-coherent galactic halos: how angular momentum can provide a 'smoking gun' for ultra-light particle dark matter,
High Energy Physics Seminar, Dep.of Physics, Univ. Florida, Gainesville, USA, Oct. 2012

9. Finding new signature effects on galactic dynamics to constrain scalar-field dark matter,
IV International Meeting on Gravitation and Cosmology, Guadalajara, Mexico, May 2012

8. Dark matter as a field: constraints from the dynamics within and around galaxies,
Seminar in extragalaktischer Astrophysik, Inst. für Astrophysik, Univ.Vienna, Austria, March 2012

7. Quantum-coherent dark matter: on axions and other ultra-light bosons ,
High-Energy Physics – Astrophysics Seminar, Dep.of Physics, Univ.Michigan, Ann Arbor, USA, Nov. 2011

6. Is cosmological dark matter a Bose-Einstein condensate ?
Seminar in mathematischer Physik, Fakultät für Physik, Univ.Vienna, Austria, June 2010

5. Vortices (and the angular momentum problem) in Bose-Einstein condensed cold dark matter halos, Theoret. Astrophys. Seminar, Dep. of Astronomy, U. Texas, Austin, Oct. 2009

4. Vorticity in rotating Bose-Einstein condensates in the strong-coupling regime,
Center for Complex Quantum Systems, U. Texas, Austin, Nov. 2008

3. Vorticity in rotating Bose-Einstein condensates in the regime of strong coupling,
XXIV Max-Born-Symposium 'Quantum Statistical Mechanics and Field Theory', Wroclaw, Poland, 09/2008

2. *Vorticity in rotating Bose-Einstein condensates*,
Seminar Kondensierte Materie, Institut für Theoretische Physik, Univ. Cologne, Germany, Oct. 2007

1. *Vorticity in rotating Bose-Einstein condensates*,
Frankfurt Institute for Advanced Studies, Frankfurt am M., Germany, August 2007

Contributed scientific talks:

14. *Scalar-field dark matter versus standard CDM: looking for deviance,*
CoSyne: Cosmological Synergies in the upcoming decade, IAP, Paris, France, Dec. 2019

13. *If Dark Matter dominates before BBN: Implications, from Gravitational Wave Detection to the Growth of Structure*, American Physical Society April Meeting 2018, Columbus, OH, USA

12. *Complex Scalar Field Dark Matter and its Impact on Detectability of the Stochastic Gravitational Wave Background from Inflation*, special session "Gravitational Waves and Dark Matter",
American Physical Society April Meeting 2017, Washington, DC, USA, Jan. 2017

11. *Dark Stars as Progenitors of Supermassive Black Holes ?,*
COSMO-16, Intern.Conf. on Particle Physics and Cosmology, Ann Arbor, MI, USA, Aug. 2016

10. *How Dark Matter Conspires to Facilitate Baryogenesis at the Electroweak Scale*,
DPF 2015, Meeting of the American Physical Society Division of Particles and Fields,
Ann Arbor, MI, USA, Aug. 2015

9. *Dark Stars: Evolution and First Pulsation Results*
Talk and press conference (Sun, April 12th),
American Physical Society April Meeting 2015, Baltimore, MD, USA

8. *Supermassive Dark Stars: Improved Models and First Pulsation Results,*
COSMO-14, Intern.Conf. on Particle Physics and Cosmology, Chicago, IL, USA, Aug. 2014

7. *Growth of Structure in a Universe with Complex Scalar-Field Dark Matter,*
American Physical Society April Meeting 2014, Savannah, GA, USA

6. *Supermassive Dark Stars and Their Primordial Environment*,
27th Texas Symposium on Relativistic Astrophysics, Dallas, TX, USA, Dec. 2013

5. *Cosmology and Structure Formation with Scalar Field Dark Matter*,
American Physical Society April Meeting 2013, Denver, CO, USA

4. *Quantum-Coherence on Galactic Scales: New Prospects for Constraining Ultra-Light Particle Dark Matter*, American Physical Society April Meeting 2012, Atlanta, GA, USA

3. *CDM Halos as Bose-Einstein Condensates: from Axions to Repulsive Dark Matter*,
American Physical Society April Meeting 2011, Anaheim, CA, USA

2. *The Impact of CDM Variants on the Angular Momentum and Vorticity of Halos*,
SF10 Cosmology Summer Workshop, Santa Fe, NM, USA, July 2010

1. *Vorticity in Rotating 2D Bose-Einstein Condensates in the Regime of Strong Coupling*,
Spring Meeting of the German Physical Society (DPG), Berlin, Germany, Feb. 2008

Further participation in conferences / poster presentations** (in chronological order)**:

1. Poster: Spherical Models for Galaxies with Cuspy Mass Densities,
   Annual meeting of the German Astronomical Society, Freiburg i.Br., Germany, Sept. 2003

2. Oberwolfach Seminar 'The Mathematics of the Bose Gas',
   Mathematical Research Institute Oberwolfach, Germany, June 2004

3. Workshop 'Open Quantum Systems' at the International Erwin-Schrödinger-Institute of
   Mathematical Physics (ESI), Vienna, Austria, Feb. & March 2005

4. Poster: Analytical Stability Results for Vortices in 2-dim. Bose-Einstein Condensates,
   Intern. Conf. 'The Quantum Physics of Nature', Univ. of Vienna, May 2005

5. Oberwolfach Meeting 'Analysis and Quantum Physics',
   Mathematical Research Institute Oberwolfach, Germany, Sept. 2005

6. Workshop 'Bose-Einstein Condensation and Quantum Information', ESI, Vienna, Dec. 2005

7. Poster: Analytical Galactic Models with Mild Central Cusps, IAU Symposium S235
   'Galaxy Evolution Across the Hubble Time', Prague, Czech Republic, August 2006

8. Poster: Vortices in 2-dim. Rotating Bose-Einstein Condensates,
   Workshop 'Collective Phenomena in Macroscopic Systems', Como, Italy, Dec. 2006

9. Workshop 'Deterministic Dynamics meets Stochastic Dynamics', ESI, Vienna, April 2007

10. 'Vienna Symposium on the Foundations of Modern Physics', Univ. Vienna, June 2007

11. Annual meeting of the German Astronomical Society, Würzburg, Sept. 2007

12. 12th Paris Cosmology Colloquium, Observatoire de Paris, July 2008

13. Poster: Analytical Galactic Models with Mild Stellar Cusps, Nov.2008
    Workshop 'Galaxy Evolution: Emerging Insights & Future Challenges', Dep. of Astronomy, UT Austin

14. Poster: A Hidden Disorder Scenario for the Low-Temperature Phase Transitions
    in Heavy-Fermion Compounds, Workshop 'Korrelationstage 09',
    Max-Planck-Institute for the Physics of Complex Systems, Dresden, Germany, March 2009

15. Poster: Quantum Phase Transitions: A 'Hidden Disorder' Scenario for Complex Ordering Phenomena,
    2nd Vienna Symposium on the Foundations of Modern Physics, Univ.Vienna, June 2009

16. 13th Paris Cosmology Colloquium, Observatoire de Paris, July 2009

17. Poster: Quantum Phase Transitions: the Interplay of Competing Fields, Workshop
    'Finite-Temperature Non-Equilibrium Superfluid Systems', Durham Univ., United Kingdom, Sept. 2009

18. Poster: Vortices and Angular Momentum in Bose-Einstein-Condensed ColdDark Matter Halos, at the
    Frank-Bash-Symposium and at the Texas Cosmology Network Meeting,
    Dep. of Astronomy and Texas Cosmology Center, UT Austin, Oct. 2009

19. Poster: The Impact of Cold Dark Matter Variants on the Halos of the First
    Stars and Galaxies: Angular Momentum and Vortex Creation in BEC Dark Matter ,
    Intern. Conf. 'The First Stars and Galaxies: Challenges for the Next Decade', Austin, March 2010

20. Astrophysics with the 21cm line, Aspen Physics Workshop, Aspen, CO, USA, June/July 2010

21. Poster: Angular Momentum in Bose-Einstein Condensed CDM Halos,
    219th American Astronomical Society (AAS) Meeting, Austin, Jan. 2012

22. Near-Infrared Background and the Epoch of Reionization, Texas Cosmology Center Workshop,
    UT Austin, May 2012

23. Cosmological Radiative Transfer Comparison Project Workshop IV, UT Austin, Dec. 2012

24. Poster: Cosmology and Structure Formation with Scalar-Field Dark Matter,
    Galaxies within the cosmic web KICP Workshop, Chicago, IL, USA, June 2013

25. Cyber-Infrastructure Days, Univ. Michigan, Nov. 2013

26. Research Computing Symposium, Univ. Michigan, Nov. 2014

27. Hidden Sector Dark Matter Workshop, Michigan Center f. Theoret. Physics, Univ. Michigan, Nov. 2014

28. 12th Vienna Central European Seminar on Particle Physics and Quantum Field Theory
    (Physics at LHC -Run 2), Vienna, Dec. 2016

29. „Next Frontiers in Theory" Meeting, UT Austin, Feb. 2017

30. ESI Program "Quantum Physics and Gravitation", Vienna, June 2017

31. 13th Vienna Central European Seminar on Particle Physics and Quantum Field Theory
    (Scalars, Fifth Forces and Massive Neutrinos), Vienna, Nov./Dec. 2017

32. Interstellar Medium in the Nearby Universe, Bamberg, Germany, March 2018

33. CLUEs meeting, Puerta de la Cruz, Tenerife, Spain, June 2018

34. XXXth General Assembly of the International Astronomical Union, Vienna, Aug. 2018

35. Frank N. Bash Symposium 2019, New Horizons in Astronomy, UT Austin, Texas, USA, Oct. 2019

36. XIV International Conference on Interconnections between Particle Physics and Cosmology, Oklahoma,
    USA, online due to Cov19, May 2021

Research stays beyond 2 weeks:

.) Dept. of Mathematical Physics and Astronomy, University of Ghent, Belgium, Nov. 2001, Feb. 2002
.) Dept. of Astronomy and Texas Cosmology Center, University of Texas at Austin, May and Oct. of 2009
.) Michigan Center for Theoretical Physics, University of Michigan (Ann Arbor), Nov. 2011
.) Dept. of Astronomy, University of Texas: Aug.2016 / Feb.2017 / Aug.-Sept. 2017 / Feb.2019 / Oct. 2019 / Feb. 2020

Soft skills workshops:

.) Inspec for University Libraries, Vienna 2001
.) McKinsey Workshop, Vienna, Dec. 2003
.) National Science Foundation (NSF) Communicating Science Workshop, Austin, TX, USA, March 2010
.) American Physical Society (APS) Professional Skills Workshop for Women Physicists, Anaheim, CA, USA, April 2011

Teaching and mentoring:

1. Universität Wien / University of Vienna: (2016-2023)

Course teaching: (Excellent course evaluations by students / Exzellente Lehrevaluationen)

Summer term 2016 up to winter term 2020/21: total amount of 29 SWS course teaching
(1 SWS ≈ 1.5 - 2 ECTs)
Course teaching as part of the Astronomy Bachelor and Master curricula:

Master:
.) Kosmologische Strukturbildung: theoretische Grundlagen und moderne Anwendungen /
Cosmological structure formation: theoretical foundations and modern applications
4.0 ECTS (2.0 SWS)

Bachelor:
UE-Gruppen / practice courses:
.) Mathematische Methoden der Physik für AstronomInnen I /
Mathematical Methods of Physics for Astronomy I
.) Theoretische Physik I: Klassische Mechanik / Theoretical Physics I: Classical Mechanics
.) Analysis für PhysikerInnen III / Analysis for Physics III

each has 3.0 ECTS (2.0 SWS) per class; I usually taught two classes per semester.

Supervision of Astronomy students:

Supervised Master theses:

1. Horst Foidl: *The effect of AGN feedback on baryonic and dark matter properties of simulated, massive galaxies*, finished Mar. 2020 (co-supervised with Michaela Hirschmann)

2. Sonja O. Schobesberger: *Fuzzy Dark Matter Halos: Angular Momentum, Vortices and Quantum Turbulence*, finished Oct. 2020 (1 MNRAS paper)
Sept.2018 – Sept. 2020: student employee for 10h (1st yr) and 20h (2nd yr) paid from my FWF grant

3. Kevin Pils: *Gravitational contraction and galaxy formation in scalar field dark matter cosmologies*, finished Oct 2021 (1 MNRAS paper),
Oct. 2020 – Aug.2021: student employee for 10h paid from my FWF grant

4. Sanje Fenkart: *Dark Stars and Planetariums: How to connect current Cosmological Research with Outreach Methods*, finished Nov.2021

5. Matthias Stallovits: *Dynamik galaktischer Halos mit selbstwechselwirkenden, ultraleichten dunklen Materieteilchen* (paper in prep), finished April 2023;
Oct. 2021 – Aug.2022: student employee for 20h paid from my FWF grant

Ongoing PhD Thesis:

1. Horst Foidl: *Structure Formation in the ΛSFDM-Model as an Alternative to the ΛCDM-Model*, since Feb.2021 (1 Phys.Rev.D paper; 1 subm., 2 in prep.)

Supervised Bachelor Theses:

1. Sonja O. Schobesberger: „Stability of Galaxy Halos with BEC Dark Matter“

2. Pavel Ivanov: „Dunkle Materie Teilchen und deren Detektion“

3. Florian Steininger: „Pulsar timing signal from complex scalar field dark matter“

4. Arijane Sommeregger: „Hydrodynamische Modellierung dunkler Materie in Galaxien“

5. Yusuf Kabbani: „Scalar Field Dark Matter described by the Schrödinger-Newton equation for higher states“

6. Ivo Wakounig: „The Influence of Axions on Parameters of the Early Universe“

7. Kevin Pils: „Dark matter models and adiabatic contraction of galactic halos“

8. Nora Hawle: „Vortices in Bose-Einstein condensed galactic halos“

9. Elisabeth Schnabel: „Dispersion von Wellenfunktionen im Rahmen der Schrödinger-Newton-Gleichung am Beispiel eines galaktischen BEC-CDM-Halos“

10. Thomas Strasser: „BEC-CDM Interactions & PT -Symmetry“

11. Matthias Stallovits: „Dynamik galaktischer Halos mit selbstwechselwirkenden, ultraleichten dunklen Materieteilchen“

2. Universität zu Köln / University of Cologne: (2008-2009)

Course teaching as part of the diploma studies in Physics

UE-Gruppen/practice courses:

.) SS08: *Quantenphysik / Quantum physics* (2.0 SWS)
.) WS08/09: *Klassische Theoretische Physik II / Classical Theoretical Physics II* (2.0 SWS)
Organisationsleiter der UE-Kurse / organization of all practice classes
.) SS09: *Oberseminar „Graphene“*: supervision of student participants

3. University of Texas at Austin: (2010-2013)

Teaching assistant and replacement instructor for Professor Paul Shapiro

Graduate courses for Astronomy majors:
.) *Astrophysical Gas Dynamics I & II*
.) *Formation of Galaxies and Large-Scale Structure*

Undergraduate course: *Introduction to Astronomy* for non-science majors

Co-supervision of two PhD students of Astronomy :
.) Bohua Li: 2012-2017, *Cosmology of Scalar Field Dark Matter* (2 Phys.Rev.D papers)
.) Taha Dawoodbhoy: > 2017, ongoing, *Halo Formation in Scalar Field Dark Matter* (2 MNRAS papers)