

Scientific Attachment

DR. TOBIAS BEUCHERT

Scientific Experience

Multi-wavelength / Multi-messenger Astronomy

Planning, execution, analysis, and publishing of

- Ground-based and spaceborne observatories
- Observations at radio, sub-mm, optical, ultraviolet, X-ray, and gamma wavelengths
- Observations of neutrinos (ANTARES detector)

Methods

Self-consistent modeling of large and complex datasets (time and frequency domain), in-depth parameter analyses, imaging (radio interferometry, coded-mask), image analyses, modeling of (astro)physical processes over many orders of magnitudes (time, frequency, spatial domain)

Design studies for X-ray Observatories

Detector simulations and telemetry study

Research Stays

University of California San Diego (UCSD), United States

07/2013, 04/2015

Several stays at the Max-Planck Institut für Radioastronomie, Bonn, Germany

04/2010 – 03/2013

European Space Agency's Astronomy Centre (ESAC), Madrid, Spain

09/2011 – 12/2011

International Collaborations

TANAMI: Tracking Active Galactic Nuclei with Australian-South-African Milliarcsecond Interferometry

2013 – 2019

Conference Talks (selection)

ISM (Interstellar Matter), Bamberg, Germany

03/2018

"Self-consistent study of feedback in Ultraluminous X-ray sources"

Tautenburg Seminar, Tautenburg, Germany

07/2017

"X-raying the obscuring environment of Active Galactic Nuclei"

Polarized Emission from Astrophysical Jets, Ierapetra, Greece

06/2017

"VLBA polarimetry monitoring of 3C 111: jet physics on parsec scales"

The X-ray Universe, Rome, Italy

06/2017

"A Suzaku, NuSTAR, and XMM-Newton view on variable absorption and relativistic reflection in NGC 4151"

ESAC Trainee Meeting, Madrid, Spain

10/2014

"A variable-density absorption event in NGC 3227 mapped with Suzaku and Swift"

Annual Meeting of the German Astronomical Society, Bamberg, Germany

09/2014

"A variable-density absorption event in NGC 3227 mapped with Suzaku and Swift"

10th INTEGRAL/BART Workshop, Karlovy Vary, Czech Republic

06/2013

X-ray Variability Study of Polar Scattered Seyfert I Galaxies

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Invited Talks (selected)

Chalmers University of Technology, Göteborg, Sweden

01/2021

ASTRON, Dwingeloo, The Netherlands

05/2018

Anton Pannekoek Institute for Astronomy, Univ. Amsterdam, The Netherlands

04/2017

Center for Astrophysics & Space Sciences, San Diego, USA

04/2015

Caltech, Pasadena, USA

04/2015

Poster contributions at selected Conferences

Blazars Through Sharp Multiwavelength Eyes, Malaga, Spain

06/2016

High-resolution X-ray spectroscopic software and tools, Madrid, Spain

05/2016

XMM-Newton (X-ray satellite): Next Decade, ESAC, Madrid, Spain

05/2016

Torus 2015, Winchester, England

09/2015

XMM-Newton Science Workshop, Madrid, Spain

06/2015

The X-ray Universe, Dublin, Ireland

06/2014

The innermost regions of relativistic jets and their magnetic fields, Granada, Spain

06/2013

Successful Observing-Time Proposals

IRAM 30-m (sub-mm telescope)

2019

"Probing jet feedback influence onto molecular gas in SS 433"

XMM-Newton (X-ray satellite)

2016, 2017, 2018

"X-ray and radio absorption variability & wind outflows in the young Active Galactic Core of PKS 1718-649"

Swift (X-ray satellite)

2015

"Follow-up observations of the Active Galaxy NGC 3227"

XMM-Newton (X-ray satellite)

2015

"Correlated X-ray and radio absorption variability in PKS 1718-649"

XMM-Newton (X-ray satellite)

2014

"Occultation event in the Active Galactic Core of NGC 3227"

Publication List

DR. TOBIAS BEUCHERT

Publications (peer-reviewed)

- 1 Burtscher, L., Dagleish, H., Barret, D., **Beuchert, T.**, et al. 2021, *Nature Astronomy*, 5, 857-860: Forging a sustainable future for astronomy
- 2 White, J. A., Dagleish, H., Burtscher, L., Frost, A. J., **Beuchert, T.**, The A4E Community, 2021, *Bulletin of the AAS*, 53(2): Astronomers for Planet Earth: Engaging with the Public to Forge a Sustainable Future
- 3 Cangemi, F., **Beuchert, T.**, et al. 2021, *A&A*, 650, 93: Potential origin of the state-dependent high-energy tail in the black hole microquasar Cygnus X-1 as seen with INTEGRAL
- 4 Kantzas, D., Markoff, S., **Beuchert, T.**, et al. 2021, *MNRAS*, 500, 2112-2126: A new lepto-hadronic model applied to the first simultaneous multiwavelength data set for Cygnus X-1
- 5 Schulz, R., Kadler, M., Ros, E., .. **Beuchert, T.** .. et al. 2020, *A&A*, 644, 85: Sub-milliarcsecond imaging of a bright flare and ejection event in the extragalactic jet 3C 111
- 6 Garcia, J. A., Kara, E., Walton, D., **Beuchert, T.**, et al. 2019, *ApJ*, 871, 88: Implications of the Warm Corona and Relativistic Reflection Models for the Soft Excess in Mrk 509
- 7 **Beuchert, T.**, Rodríguez-Ardila, A., Moss, V. A., et al. 2018, *A&A*, 612, L4: Extended X-ray emission in PKS 1718–649
- 8 **Beuchert, T.**, Großberger, C., Schulz, R., et al. 2018, *A&A*, 610, A32: VLBA polarimetry monitoring of 3C 111
- 9 **Beuchert, T.**, Markowitz, A. G., Dauser, T., et al. 2017, *A&A*, 603, 50: A Suzaku, NuSTAR and XMM-Newton view on variable absorption and relativistic reflection in NGC 4151
- 10 Ahnen, M. L., Ansoldi, S., Antonelli, L. A., .. **Beuchert, T.** .. et al. 2017, *A&A*, 603, A25: First Multi-wavelength Campaign on the Gamma-ray-loud Active Galaxy IC 310
- 11 Kadler, M., Krauß, F., Mannheim, .. **Beuchert, T.** .. et al. 2016: Coincidence of a high-fluence blazar outburst with a PeV-energy neutrino event, *Nature Physics*, 12, 807
- 12 Krauß, F., Wilms, J., Kadler .. **Beuchert, T.** .. et al. 2016: The TANAMI Multiwavelength Program: Dynamic spectral energy distributions of southern blazars, *A&A*, 591, A130
- 13 Fürst, F., Müller, C., Madsen, K. K. .. **Beuchert, T.** .. et al. 2016: NuSTAR and XMM-Newton Observations of the Hard X-Ray Spectrum of Centaurus A, *ApJ*, 819, 150
- 14 **Beuchert, T.**, Markowitz, A. G., Krauß, F., et al. 2015: A variable-density absorption event in NGC 3227 mapped with Suzaku and Swift, *A&A*, 584, A82
- 15 Svoboda, J., **Beuchert, T.**, Guainazzi, M., et al. 2015: An X-ray variable absorber within the broad line region in Fairall 51, *A&A*, 578, A96
- 16 ANTARES Collaboration, Adrián-Martínez, S., Albert, A. .. **Beuchert, T.** .. et al. 2015: ANTARES constrains a blazar origin of two IceCube PeV neutrino events, *A&A*, 576, L8
- 17 Müller, C., Krauß, F., Dauser, T., Kreikenbohm, A., **Beuchert, T.**, et al. 2015: Redshifted Fe $K\alpha$ line from the unusual $\hat{\nu}$ -ray source PMN J1603-4904, *A&A*, 574, A117
- 18 Krauß, F., Kadler, M., Mannheim, K. .. **Beuchert, T.** .. et al. 2014: TANAMI blazars in the IceCube PeV-neutrino fields, *A&A*, 566, L7
- 19 Miniutti, G., Sanfrutos, M., **Beuchert, T.**, et al. 2014: The properties of the clumpy torus and BLR in the polar-scattered Seyfert 1 galaxy ESO 323-G77 through X-ray absorption variability, *MNRAS*, 437, 1776

Publication List

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Proceedings, Posters, and Bulletins

(reviewed: “Acta Polytechnica”, “European Physics Journal Web of Conferences”, “SPIE”)

- 1 White, J. A., Dagleish, H., Burtscher, L., Frost, A. J., **Beuchert, T.**, The A4E Community, 2021, Bulletin of the AAS, 53(2): Astronomers for Planet Earth: Engaging with the Public to Forge a Sustainable Future
- 2 **Beuchert, T.**, Markowitz, A. G., Dauser, T., et al. 2016: The symbiosis of variable absorption and blurred reflection in the X-ray-absorbed Seyfert 1.5 galaxy NGC 4151, In: Active Galactic Nuclei: What’s in a Name?, 94
- 3 Fink, M., Dauser, T., **Beuchert, T.**, et al. 2016: Relativistic Iron Line Fits, In: Active Galactic Nuclei: What’s in a Name?, 92
- 4 **Beuchert, T.**, Markowitz, A., Dauser, T., et al. 2016: The symbiosis of variable absorption and blurred reflection in the X-ray-absorbed Seyfert 1.5 galaxy NGC 4151, In: XMM-Newton: The Next Decade, 78
- 5 Krauss, F., Wilms, J., Kadler, M. .. **Beuchert, T.** .. et al. 2016: VizieR Online Data Catalog: Dynamic SEDs of southern blazars - DSSB (Krauss+, 2016), VizieR Online Data Catalog, 359
- 6 **Beuchert, T.**, Markowitz, A. G., Krauß, F., et al. 2015: A Variable-Density Absorption Event in NGC 3227 mapped with Suzaku and Swift, In: Gandhi, P. and Hoenig, S. F. (eds.), TORUS 2015, 26
- 7 **Beuchert, T.**, Markowitz, A., Longinotti, A., et al. 2015: A Variable-Density Absorption Event in NGC 3227 mapped with Suzaku and Swift, In: Strassmeier K. G., Brandenburg, A., Kudritzki, R. P., Neuhäuser, R. (eds.), The Extremes of Black Hole Accretion, 73
- 8 Wilms, J., Brand, T., Barret, D., **Beuchert, T.**, et al. 2014: ATHENA end-to-end simulations, Proc. SPIE, 9144
- 9 Kuehnel, M., Ballhausen, R., Krauss, F., **Beuchert, T.**, et al. 2014: Swift-XRT spectrum of the first detected double-peaked outburst of GRO J1008-57, The Astronomer's Telegram, 6656
- 10 **Beuchert, T.**, Markowitz, A., Dauser, T., et al. 2014: A Variable-Density Absorption Event in NGC 3227 mapped with Suzaku and Swift, In: Ness, J. U. (ed.), The X-ray Universe 2014, 228
- 11 **Beuchert, T.**, Wilms, J., Kadler, M., et al. 2014, In: Adlerová, I. (ed.), IBWS 2013, Acta Polytechnica, 54, 266
- 12 **Beuchert, T.**, Kadler, M., Wilms, J., et al. 2013: Single-Dish Radio Polarimetry in the F-GAMMA Program with the Effelsberg 100-m Radio Telescope, In: Gómez, J. L. (ed.), European Physical Journal Web of Conferences, 61
- 13 Grossberger, C., Kadler, M., Wilms, J., Müller, C., **Beuchert, T.** et al. 2012, In: Acta Polytechnica, 52, 18

30 publications; 403 citations; h-index: 11

All articles are accessible for free via the arXiv: <https://arxiv.org/>