

# Scientific Attachment

DR. TOBIAS BEUCHERT

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## 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

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## Publications (peer-reviewed)

- 1 Cangemi, F., **Beuchert, T.**, et al. 2021, arXiv:2102.04773: Potential origin of the state-dependent high-energy tail in the black hole microquasar Cygnus X-1 as seen with INTEGRAL
- 2 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
- 3 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
- 4 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
- 5 **Beuchert, T.**, Rodríguez-Ardila, A., Moss, V. A., et al. 2018, A&A, 612, L4: Extended X-ray emission in PKS 1718–649
- 6 **Beuchert, T.**, Großberger, C., Schulz, R., et al. 2018, A&A, 610, A32: VLBA polarimetry monitoring of 3C 111
- 7 **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
- 8 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
- 9 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
- 10 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
- 11 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
- 12 **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
- 13 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
- 14 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
- 15 Müller, C., Krauß, F., Dauser, T., Kreikenbohm, A., **Beuchert, T.**, et al. 2015: Redshifted Fe  $K\alpha$  line from the unusual  $\hat{\text{I}}\text{S}$ -ray source PMN J1603-4904, A&A, 574, A117
- 16 Krauß, F., Kadler, M., Mannheim, K. .. **Beuchert, T.** .. et al. 2014: TANAMI blazars in the IceCube PeV-neutrino fields, A&A, 566, L7
- 17 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/>