CURRICULUM VITAE

Bjorn Emonts

Associate Scientist
National Radio Astronomy Observatory

Name (last, first)	Emonts, Bjornie Hendrikus Cornelius
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Education

2006 Nov	Ph. D. (Astronomy), University of Groningen
2001 Aug	M. S. (Physics & Astronomy), University of Groningen / STScI, Baltimore
1997 Aug	B. S. (Physics & Astronomy), University of Groningen

Employment

2017/07–current	National Radio Astronomy Observatory, Charlottesville VA Associate Scientist, CASA User Liaison
2012/07–2017/06	Centro de Astrobiología (CSIC-INTA), Madrid, Spain EU Marie Curie Fellowship / Spanish National Research Council (CSIC)
2008/09–2012/06	Australia Telescope National Facility, Sydney, Aus Bolton Fellowship
2006/08–2008/08	Columbia University, New York Rubicon Postdoctoral Fellowship (Prof. J. van Gorkom)

Academic appointments

2002/05–2006/05	University of Groningen, Netherlands - PhD thesis: *"Nearby Radio Galaxies: the interplay of gas, star formation & active nucleus"* (Prof. R. Morganti)
2003/03-2003/05, 2005/06-2005/07	University of Sheffield, Sheffield, U.K. Visiting PhD student (Prof. C.N. Tadhunter)
2000/09–2001/06	Space Telescope Science Institute, Baltimore, MD B.S. internship: *"Photodissociation as tracer for H_2 in M81"* (Prof. R.J. Allen)
1998/12–1999/02	ASTRON, Dwingeloo & SRON, Groningen, Netherlands Internship: *"Testing Fabry-Perrot Etalon for VLT VISIR"* (Prof. J.W. Pel)

Grants & awards as Principal Investigator

2020 - *$30k*	NASA HST Data Analysis Award, program 16123
2018 - *$4k*	Student Observing Support grant NRAO
2013 - *€230k*	Marie Curie Intra-EU Fellowship, FP7 grant 624351
2008 - *$42k*	NASA Spitzer Data Analysis Award, program 40453
2006 - *€82k*	Rubicon Stipend, Netherlands Org. for Scientific Research, grant 680.50.0508
2003 - *€3k*	Research Travel Grant, Netherl. Org. for Scientific Research, R 78-379

Allocated observing time as Principal Investigator

51 (172) hrs	Atacama Large Millimeter Array (8 projects: cycle-3: 2015.1.00851 & 1.00897; cycle-4: 2016.1.01417 & .2.00048; cycle-6: 2018.1.00293 & 1.00859 &1.01334, cycle-7: 2019.1.01251)
458 hrs	Very Large Array (18 projects: AE151, 07A-217, 08A-139, 10A-127, 11B-048, 11B-086, 12A-152, 14B-160, 15A-316, 15B-005, 16B-296, 17A-174, 17B-444, 19A-351, 19B-225, 19B-184, 20B-428, 21A-059)
933 hrs	Australia Telescope Compact Array, NSW, Australia (9 projects: C1170, C1382, C1497, C1867, C2052, C2498, C2885, C2717, C3096)
398 hrs	Westerbork Synthesis Radio Telescope, Netherlands (7 projects: R05A/022 ; R04A/31; R07A010; R09B014; R10A014; R10B009; R10B021)
22 hrs	Plateau de Bure Interferometer (1 project: W15EB)
7.5 hrs	Spitzer Space Telescope (1 project: 40453)
-	Hubble Space Telescope (1 Archival Research project: 16123)
17 hrs	Very Large Telescope, Chile (2 projects: SINFONI 093.B-0458, VIMOS 097.A-0503)
11 hrs	Gran Telescopio Canarias 10m, Spain (3 projects: 69015B, 19-16B, 47-17B)
4 nights	William Herschel Telescope, Spain (2 projects w2003bN5, sw2003a34)
6 nights	MDM Observatory 2.4m, Kitt Peak, US (2 projects)

Supervised students

2020-current	Mr. Jianrui Li , Ph. D. student, Tsinghua University, China (primary co-supervisor, together with Prof. Zheng Cai)
2020-current	Ms. Emiko Gardiner, undergraduate student, University of Virginia (secondary supervisor, primary supervision by Dr. Ilsang Yoon)
2018-current	Ms. Sophie Lebowitz, NAC student, Ohio State University (primary supervisor)
2019	Mr. Shane Bechtel, NRAO summer student, Arizona State University (primary supervisor, together with Dr. Ilsang Yoon)

2010-2011	Mr. Jeffrey Hodgson, ATNF summer student, Curtin University, Perth Australia (primary supervisor)
2009-2010	Mr. Craig Burnett, ATNF summer student, University of Melbourne, Australia (primary supervisor)

Committees / professional activities (last 10 years)

Current	Stakeholder Representative CASA Users Committee & Community
Current	NRAO TAC: member Science Review Panel for the high-z universe
Current	Referee peer-reviewed journals MNRAS, A&A and PASJ
Current, 2016-17	ATNF TAC: External Reader Time Allocation Committee
2019-2010	Local Organizing Committee, CASA Users Committee F2F meeting
2017-2018	National Astronomy Consortium (NAC) tutor and mentor
2014-2016	Journal Club organizer, Centro de Astrobiología (CSIC-INTA)
2008-2016	Duty astronomer, Australia Telescope Compact Array (ATNF)
2011-2012	Colloquium organizer, Australia Telescope Compact Array (ATNF)
2011	Local Organizing Committee, Australian ALMA Community Workshop

Research expertise (and interests)

Cold Molecular Medium around high-z galaxies

Aim & Technique — Detect molecular gas across the circum- and inter-galactic medium at high-z, and study its role in galaxy evolution; cold accretion, feedback, enrichment. Low-surface-brightness mm interferometry. (HST imaging of diffuse starlight).

Galaxy evolution in the Early Universe

Aim & Technique — Study the co-evolution of distant black holes, galaxies & proto-clusters. Mm interferometry of cold gas with VLA/ALMA. (JWST H_2 IR-spectroscopy).

AGN feedback and outflows

Aim & Technique — Outflows of neutral/molecular gas to study the effects of AGN feedback. HI absorption at high spectral-dynamic range; H_2 near-IR spectroscopy.

Origin and evolution of radio galaxies

Aim & Technique — Study co-evolution of AGN, host galaxies and circum-galactic medium. HI 21cm spectroscopy, radio-continuum imaging, optical imaging/spectroscopy

Galaxy evolution with a Next-Generation VLA

Aim & Technique — Prepare science cases for ngVLA, emphasizing its core configuration Low-surface-brightness observations with the ngVLA core (CASA simulations).

PUBLICATION LIST

Summary (10 Jan 2021)

Total number publications in refereed journals	71	(31% as PI)
Total number proceedings / white papers / thesis	43	(37% as PI)
Total number of citations:	2170	(26% on PI papers)
H-index:	27	

Selected Journal Papers - major contribution**

*** Principal Investigator or 1st/2nd co-I*

1. Murthy, S., Morganti, R., **Emonts**, B., and 3 co-authors, 2020, A&A, 643, 74: *"Disc galaxy resolved in HI absorption against the radio lobe of 3C 433: Case study for future surveys"*
2. Lehnert, M., Yang, C., **Emonts**, B., and 4 co-authors, 2020, A&A, 641, 124: *"Etching glass in the Early Universe: Luminous HF and H2O emission in a QSO-SMG pair at z = 4.7"*
3. **Emonts**, B., Cai, Z., Prochaska, J. X., Li, Q., Lehnert, M., 2019, ApJ, 887, 86: *"The cold circumgalactic environment of MAMMOTH-I: dynamically cold gas in the core of an Enormous Lyα Nebula"*
4. **Emonts**, B., Lehnert, M., Dannerbauer, H. and 9 co-authors, 2018, MNRAS, 477, 60: *"Giant galaxy growing from recycled gas: ALMA maps the circumgalactic molecular medium of the Spiderweb in [CI]"*
5. Villar-Martin, M., **Emonts**, B. H. C., Cabrera Lavers, A., and 7 co-authors, 2017, MNRAS, 472, 4659: *"Galaxy-wide radio-induced feedback in a radio-quiet quasar"*
6. Dannerbauer, H., Lehnert, M., **Emonts**, B**.**, and 18 co-authors, 2017, A&A 608, 48: *"The implications of the surprising existence of a large massive CO disk in a distant protocluster"*
7. **Emonts,** B. H. C.**,** Colina, L., Piqueras-Lopez, J., and 5 co-authors, 2017, A&A, 607, 116: *"Outflows of hot molecular gas in ultra-luminous infrared galaxies mapped with VLT-SINFONI"*
8. Huynh, M. T., **Emonts,** B. H. C., Kimball, A. M., and 13 co-authors, 2017, MNRAS, 467, 1222: *"The AT-LESS CO(1-0) survey of submm galaxies in the Extended Chandra Deep Field South"*
9. **Emonts**, B. H. C., Lehnert, M.D., Villar-Martín, M., Norris, R., and 18 co-authors, 2016, *Science*, 354, 1128: *"Molecular Gas in the Halo of a Massive Cluster Galaxy During its Assembly at High Redshift"*
10. **Emonts**, B., Morganti, R., Villar-Martín, M. and 5 co-authors, 2016, A&A 591, 19: *"From galaxy-scale fueling to nuclear feedback: merger state of radio galaxies 3C 293, 3C 305 & 4C 12.50"*
11. Villar-Martín, M., Arribas S., **Emonts**, B., and 5 co-authors, 2016, MNRAS, 460, 130: *"Ionized outflows in type 2 AGNs at z < 0.6: no evidence for significant impact on the host galaxies"*

12. **Emonts**, B. H. C.; De Breuck, C.; Lehnert, M., and 9 co-authors, 2015, A&A, 584, 99: *"The Dragonfly Galaxt II: ALMA unveils a triple merger and gas exchange in a hyper-luminous radio galaxy at z=2"*

13. **Emonts**, B. H. C., Mao, M. Y., Stroe, A., Pentericci, L., Villar-Martín, M., Norris, R. P., Miley, G., De Breuck, C., and 12 co-authors 2015, MNRAS, 451, 1025*: "A CO-rich merger shaping a powerful and hyperluminous infrared radio galaxy at z = 2: the Dragonfly Galaxy"*

14. **Emonts**, B., Piqueras-López, J., Colina, L. and 6 co-authors 2014, MNRAS, 572, 40: *"Outflow of hot and cold molecular gas from the obscured secondary nucleus of NGC 3256: closing in on feedback physics"*

15. Villar-Martín M., **Emonts** B., Humprhey A., and 2 co-authors, 2014, MNRAS, 440, 3203: *"The triggering mechanism and properties of ionized outflows in the nearest obscured quasars"*

16. Mao M. Y., Norris R. P., **Emonts** B., and 5 co-authors: 2014, MNRAS, 440, 31: *"Star formation in the ultraluminous infrared galaxy F00183-7111"*

17. Rodríguez, M., Villar-Martín M., **Emonts** B., and 4 co-authors 2014, A&A, 565, 19: *"The molecular gas content of ULIRG type 2 quasars at z < 1"*

18. **Emonts** B., Norris R., Feain I., Mao M., Ekers R., Miley G. and 16 co-authors 2014, MNRAS, 438, 2898: "*CO(1-0) survey of high-z radio galaxies: alignment of molecular halo gas with distant radio sources"*

19. Villar-Martín M., **Emonts** B., Rodríguez, and 2 co-authors, 2013, MNRAS, 432, 2104: *"SDSS J002531.46-104022.2 at z = 0.30: a candidate for the (U)LIRG to optical quasar transition"*

20. **Emonts** B. H. C., Feain I., Roettgering H. J. A., Miley G, Seymour N., Norris R. P., Villar-Martín M., Carilli C. L., and 9 co-authors, 2013, MNRAS, 430, 3465: *"CO(1-0) detection of the massive Spiderweb Galaxy (z~2) with the Australia Telescope Compact Array"*

21. Allison, J. R.; Curran, S. J.; **Emonts**, B. H. C. et al.: 2012, MNRAS, 423, 2601: *"A search for 21 cm H I absorption in AT20G compact radio galaxies"*

22. **Emonts**, B. H. C.; Burnett, C.; Morganti, R.; Struve, C. 2012, MNRAS, 421, 1421: *"Classical radio source propagating into outer H I disc in NGC 3801"*

23. Guillard, P., Ogle, P., **Emonts, B**., et al. 2012, ApJ, 747, 95: *"Strong Molecular Hydrogen Emission and Kinematics of the Multiphase Gas in Radio Galaxies with Fast Jet-driven Outflows"*

24. **Emonts, B**., Feain, I., Mao, M.; Norris, R.; Miley, G.; Ekers, R. D., Villar-Martín, M., and 8 co-authors, 2011, ApJ,734, L25: *"Molecular CO(1-0) Gas in the z~2 Radio Galaxy MRC 0152-209"*

25. **Emonts** B., Norris R., Feain, I., Miley G., and 7 co-authors, 2010, MNRAS, 415, 655:*"CO observations of high-z radio galaxies MRC2104-242 & MRC0943-242: spectral-line performance of the Compact Array Broadband Backend"*

26. **Emonts** B., Morganti R., Struve C., Oosterloo T., van Moorsel G. and 5 co-authors 2010, MNRAS, 406, 987:*"Large-scale HI in nearby radio galaxies - II. The nature of classical low-power radio sources"*

27. **Emonts B.**, Tadhunter C., Morganti R., Oosterloo T., Holt J., Brogt E. & van Moorsel, G. 2009, MNRAS, 396, 1522:*"The disc-dominated host galaxy of FR-I radio source B2 0722+30"*

28. Morganti R., **Emonts** B. & Oosterloo T. 2009, A&A, 496, 9: *"Broad H I absorption in the candidate binary black hole 4C37.11 (B2 0402+379)"*

29. **Emonts** B.H.C., Morganti R., van Gorkom, J.H., Oosterloo, T.A., Brogt E. & Tadhunter, C.N. 2008, A&A, 488, 519: *"From major merger to radio galaxy: low surface-brightness stellar counterpart to the giant HI ring around B2 0648+27"*

30. **Emonts** B.H.C., Morganti R., Oosterloo T.A., van der Hulst J.M., Holt J., Tadhunter C.N., Ojha R. & Sadler E.M. 2008 MNRAS, 387, 197: *"Enormous disc of cool gas surrounding the nearby powerful radio galaxy NGC 612 (PKS~0131-36)"*

31. Heiner J.S., Allen R.J., **Emonts** B.H.C. & van der Kruit P.C. 2007, ApJ, 673, 798: *"The volume densities of GMCs in M81"*

32. **Emonts** B., Morganti R., Oosterloo T., van der Hulst J., van Moorsel G., Tadhunter, C. 2007, A&A, 464, L1:*"Large-scale HI in nearby radio galaxies: segregation in neutral gas content with radio source size"*

33. **Emonts** B.H.C., Morganti R., Tadhunter, C.N., Holt, J.H., Oosterloo T.A., van der Hulst J.M., & Wills K. 2006, A&A, 454, 125: *"Timescales of merger, starburst and AGN activity in radio galaxy B2 0648+27"*

34. **Emonts** B.H.C., Morganti R., Tadhunter C.N., Oosterloo T.A., Holt J. & van der Hulst J.M. 2005, MNRAS, 362, 931: *"A jet-induced outflow of warm gas in 3C 293"*

35. Morganti R., Oosterloo T. A., **Emonts** B. H. C., van der Hulst J. M. & Tadhunter C. 2003, ApJ, 593, 69: *"Fast Outflow of Neutral Hydrogen in the Radio Galaxy 3C 293"*