Laura Grace Spitler

Contact Information

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Research website
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Personal Information

- ✳ Born: Des Moines, Iowa, USA
- ✳ Languages: English (native speaker), German (fluent)
- ✳ Maternity leave: child born in May 2022

Professional Positions

- ✳ **Lise Meitner Group Leader** — Mar 2019 - present
  Max Planck Independent Research Group
  MPIfR, Bonn, Germany
- ✳ **Postdoctoral Researcher** — Jan 2013 - Mar 2019
  MPIfR, Bonn, Germany
- ✳ **Graduate Student** — Aug 2006 - Dec 2012
  Cornell University, Ithaca, NY
- ✳ **DAAD Fellow** — Oct 2005 - July 2006
  MPIfR (digital electronics lab), Bonn, Germany

Education

Ph.D. in Astronomy and Space Sciences — 2013
Cornell University, Ithaca, NY, USA

Thesis - *Saving Time: New Methods and Instrumentation for Radio Variability Studies*
Advisor - Prof. James Cordes

M.Sc. in Astronomy and Space Sciences — 2010
Cornell University, Ithaca, NY, USA

B.Sc. in Physics and Astronomy with Honors — 2005
University of Iowa, Iowa City, IA, USA

Supervision of students and postdocs

Post-doctoral researchers

- Charles Walker
  MPIfR — Oct 2019 - Sept 2023
- Guðjón Henning Hilmarsson
  MPIfR — Feb 2021 - Oct 2021

PhD students

- Marlon Bause
  MPIfR / University of Bonn — Mar 2022 - present
- Suryarao Bethapudi
  MPIfR / University of Bonn — Oct 2020 - present
- Joscha Jahns-Schindler
  MPIfR / University of Bonn — Mar 2019 - present
- Leon Houben
  Nijmegen University — Sep 2016 - present
- Guðjón Henning Hilmarsson
  MPIfR / University of Bonn — Jul 2016 - Feb 2021

Masters students

- Sachin Pradeep
  MPIfR/University of Bonn — Mar 2023 - present
- Marlon Bause
  MPIfR/University of Bonn — Dec 2020 - Dec 2021
- Sonia Munjal
  MPIfR/University of Bonn — Oct 2019 - Nov 2020
- Leon Houben
  Nijmegen University — Feb 2015 - Jul 2016

Grants

- "The next generation fast radio burst detector for Australia"
  Linkage Infrastructure, Equipment, and Facilities - Australian Research Council
  Partner Investigator — 2020
- "Particle, astroparticle, astro-, hadron and nuclear physics for NFDI" (PUNCH4NFDI)
  Nationale Forschungsdaten-Infrastruktur, Deutsche Forschungsgemeinschaft
  Work package lead — 2021-2026

Successful Observing Proposals

- Effelsberg 100-m Radio Telescope: 15 as PI, 26 as co-author (over 1000 hours awarded)

- Arecibo 305-m Radio Telescope: 7 as PI, 4 as co-author (over 700 hours awarded)
- Giant Metrewave Radio Telescope: 13 as co-PI (350 hours awarded)
- Green Bank Telescope: 1 as PI (20 hours)
- Parkes Radio Telescope: 1 as PI, 8 as co-author (over 200 hours awarded)
- Others as co-author: Jansky Very Large Array, Very Long Baseline Array, Atacama Large Millimeter Array, MeerKAT, Low Frequency Array, Sardinia Radio Telescope, Hubble Space Telescope, Gemini Observatory, Gran Telescopio Canarias, MAGIC, XMM-Newton, Chandra, NuSTAR, INTEGRAL

Professional Service

- ✧ Gravitational Waves and Transients Science Review Panel: National Radio Astronomy Observatory — three semesters
- ✧ Transients Science Working Group: Square Kilometer Array (SKA) — 2019 - present
- ✧ SKA Science Regional Center Steering Committee
  Representative from the SKA Transients Science Working Group — 2020 - present
- ✧ Member of the International Astronomical Union — 2020 - present
- ✧ Scientific organizing committees (last 3 years):
  2023 Bonn Neutron Star Workshop
  2022 IAU special session on fast radio bursts
  EAS 2021: “Neutron stars and fast radio bursts: a magnetic connection"
  EAS 2021: “Apertif: Two years of survey operations"
  Astronomische Gesellschaft 2021: Transient splinter session
  FRB2020 (virtual)
- ✧ Apertif 2021 observing strategy panel: ASTRON — Dec 2020
- ✧ Scientific Council: MPIfR — Apr 2019 - present
- ✧ Apertif six-month review panel: ASTRON — Dec 2019
- ✧ Critical design review for the ARTS Transient System: ASTRON — Mar 2016
- ✧ Preliminary design review for the ARTS Transient System: ASTRON
  Chairperson — Jul 2015
- ✧ External PhD thesis examiner
- ✧ Manuscript referee for Science, Nature, Astrophysical Journal, Monthly Notices of the Royal Astronomical Society, and Astronomy & Astrophysics

Invited Talks (last 5 years)

- “Recent new results from a few interesting repeating FRBs"
  Taiwan seminar (virtual) — Dec 2021

– "An overview of fast radio bursts in the era of plentiful discoveries and localizations"
Munich joint colloquium, Munich, Germany Jan 2020

– "FRBs: a brief update and FRB 121102"
ASTRON/JIVE colloquium, The Netherlands Dec 2019

– "Fast Radio Bursts and a Case Study in Localization"
Colloquium, Curtin University, Perth, Australia Feb 2018

Invited Conference Talks (last 5 years)

– "The repeating FRB population"
Astrophysics of FRBs II, Flatiron Institute, NYC, NY Sept 2023

– "Transientennastronomie: Pulsare und Fast Radio Bursts"
Workshop: Satellitenkonstellationen, Effelsberg, Germany Jul 2023

– "Understanding the origins of FRBs through high resolution imaging"
European Astronomical Society, virtual Jun 2020

– "FRB 121102"
Astrophysics of FRBs, Flatiron Institute, NYC, NY, USA Feb 2020

– "Scientific Use Cases for Phased Array Feeds"
Workshop on phased array feeds, Bonn, Germany Sep 2019

– "Status of the repeating FRB 121102: a case study in localization"
European Week of Astronomy and Space Sciences, Lyon, France Jun 2019

– "A Review of the Arecibo Repeating FRB"
SRitp Workshop, Weizmann Institute of Science, Rehovot, Israel Dec 2018

– "The first decade of fast radio burst discoveries"
Unsolved Problems in Astrophysics and Cosmology, Budapest, Hungary Jul 2018

– "Fast Radio Burst Science with Effelsberg"
Big Science with the Big Dish, MPIfR, Bonn, Germany Feb 2018

– "An Overview and Update from the Repeating FRB"
FRB2018, Melbourne, Australia Feb 2018

Professional Development

- Management Module II for Max Planck Society group leaders Nov 2022
- Management Module I for Max Planck Society group leaders Jun 2019
- *SignUp* program for outstanding female post-docs Three workshops in 2016-2017

Broader Impacts

- ✧ Media coverage:
  Selection of press outlets reporting on results from FRB 121102: ABC (Australia), *Astronomy*, BBC, CBC, CNN, *The Guardian*, *Los Angeles Times*, *National Geographic*, NPR, *New York Times*, *Sky and Telescope*, *Spiegel Online*, *Stern und Weltraum*
- ✧ Profiles of my research:
  Mensch und Maschine, *WIRED* Germany, September 2017
  "Top Thema" highlight by the Max Planck Society
- ✧ Recent outreach activities:
  Girls Day, MPIfR — 2013, 2017, 2018, 2023
  Effelsberg Open House Day — Sept 2017
- ✧ Outreach Talks (last 5 years, in German):
  Schnelle Radioblitze - ein großes Rätsel der Astrophysik
  Planetarium Münster — May 2021
  Fast Radio Bursts
  Faszination Astronomie Online, Haus der Astronomie, Heidelberg — Jan 2021
  Fast Radio Bursts – Kurzzeit-Radioblitze am Himmel
  Bad Münstereifel, Germany — Aug 2020
  Fast Radio Bursts
  Volkshochschule Krefeld, Krefeld, Germany — Jan 2019

Publications

My publications are divided into "Primary" and "Collaboration". Primary publications are first author papers or those for which I have made a significant contribution (i.e. writing, observing, data analysis, etc.).

The convention for author ordering in my field is generally multi-tiered alphabetic. As a result, my surname generally places me near the end of the author list on collaboration publications.

S. Bethapudi, L. G. **Spitler**, R. A. Main, D. Z. Li, and R. S. Wharton. High frequency study of FRB 20180916B using the 100-m Effelsberg radio telescope. *MNRAS*, 524(3):3303–3313, September 2023.

Joscha N. Jahns-Schindler, Laura G. **Spitler**, Charles R. H. Walker, and Carlton M. Baugh. How limiting is optical follow-up for fast radio burst applications? Forecasts for radio and optical surveys. *MNRAS*, 523(4):5006–5023, August 2023.

J. N. Jahns, L. G. **Spitler**, K. Nimmo, D. M. Hewitt, M. P. Snelders, A. Seymour, J. W. T. Hessels, K. Gourdji, D. Michilli, and G. H. Hilmarsson. The FRB 20121102A November rain in 2018 observed with the Arecibo Telescope. *MNRAS*, 519(1):666–687, February 2023.

R. A. Main, G. H. Hilmarsson, V. R. Marthi, L. G. **Spitler**, R. S. Wharton, S. Bethapudi, D. Z. Li, and H. H. Lin. Scintillation time-scale measurement of the highly active FRB20201124A. *MNRAS*, 509(3):3172–3180, January 2022.

G. H. Hilmarsson, L. G. **Spitler**, R. A. Main, and D. Z. Li. Polarization properties of FRB 20201124A from detections with the Effelsberg 100-m radio telescope. *MNRAS*, 508(4):5354–5361, December 2021.

V. R. Marthi, S. Bethapudi, R. A. Main, H. H. Lin, L. G. **Spitler**, R. S. Wharton, D. Z. Li, T. Gautam, U. L. Pen, and G. H. Hilmarsson. Burst properties of the highly active FRB20201124A using uGMRT. *MNRAS*, October 2021.

G. H. Hilmarsson, D. Michilli, L. G. **Spitler**, R. S. Wharton, P. Demorest, G. Desvignes, K. Gourdji, S. Hackstein, J. W. T. Hessels, K. Nimmo, A. D. Seymour, M. Kramer, and R. Mckinven. Rotation Measure Evolution of the Repeating Fast Radio Burst Source FRB 121102. *ApJL*, 908(1):L10, February 2021.

M. Cruces, L. G. **Spitler**, P. Scholz, R. Lynch, A. Seymour, J. W. T. Hessels, C. Gouiffés, G. H. Hilmarsson, M. Kramer, and S. Munjal. Repeating behaviour of FRB 121102: periodicity, waiting times, and energy distribution. *MNRAS*, 500(1):448–463, January 2021.

G. H. Hilmarsson, L. G. **Spitler**, E. F. Keane, T. M. Athanasiadis, E. Barr, M. Cruces, X. Deng, S. Heyminck, R. Karuppusamy, M. Kramer, S. P. Sathyanarayanan, V. Venkatraman Krishnan, G. Wieching, J. Wu, and O. Wucknitz. Observing superluminous supernovae and long gamma-ray bursts as potential birthplaces of repeating fast radio bursts. *MNRAS*, 493(4):5170–5180, April 2020.

K. Gourdji, D. Michilli, L. G. **Spitler**, J. W. T. Hessels, A. Seymour, J. M. Cordes, and S. Chatterjee. A Sample of Low-energy Bursts from FRB 121102. *ApJL*, 877:L19, June 2019.

J. W. T. Hessels, L. G. **Spitler**, A. D. Seymour, J. M. Cordes, D. Michilli, R. S. Lynch, K. Gourdji, A. M. Archibald, C. G. Bassa, G. C. Bower, S. Chatterjee, L. Connor, F. Crawford, J. S. Deneva, V. Gajjar, V. M. Kaspi, A. Keimpema, C. J. Law, B. Marcote, M. A. McLaughlin, Z. Paragi, E. Petroff, S. M. Ransom, P. Scholz, B. W. Stappers, and S. P. Tendulkar. FRB 121102 Bursts Show Complex Time-Frequency Structure. *ApJL*, 876:L23, May 2019.

L. J. M. Houben, L. G. **Spitler**, S. ter Veen, J. P. Rachen, H. Falcke, and M. Kramer. Constraints on the low frequency spectrum of FRB 121102. *A&A*, 623:A42, Mar 2019.

Manisha Caleb, Laura G. **Spitler**, and Ben W. Stappers. One or several populations of fast radio burst sources? *Nature Astronomy*, 2:839–841, October 2018.

L. G. **Spitler**, W. Herrmann, G. C. Bower, S. Chatterjee, J. M. Cordes, J. W. T. Hessels, M. Kramer, D. Michilli, P. Scholz, A. Seymour, and A. P. V. Siemion. Detection of Bursts from FRB 121102 with the Effelsberg 100 m Radio Telescope at 5 GHz and the Role of Scintillation. *ApJ*, 863:150, August 2018.

D. Michilli, A. Seymour, J. W. T. Hessels, L. G. **Spitler**, V. Gajjar, A. M. Archibald, G. C. Bower, S. Chatterjee, J. M. Cordes, K. Gourdji, G. H. Heald, V. M. Kaspi, C. J. Law, C. Sobey, E. A. K. Adams, C. G. Bassa, S. Bogdanov, C. Brinkman, P. Demorest, F. Fernandez, G. Hellbourg, T. J. W. Lazio, R. S. Lynch, N. Maddox, B. Marcote, M. A. McLaughlin, Z. Paragi, S. M. Ransom, P. Scholz, A. P. V. Siemion, S. P. Tendulkar, P. van Rooy, R. S. Wharton, and D. Whitlow. An extreme magneto-ionic environment associated with the fast radio burst source FRB 121102. *Nature*, 553:182–185, January 2018.

L. K. Hardy, V. S. Dhillon, L. G. **Spitler**, S. P. Littlefair, R. P. Ashley, A. De Cia, M. J. Green, P. Jaroenjittichai, E. F. Keane, P. Kerry, M. Kramer, D. Malesani, T. R. Marsh, S. G. Parsons, A. Possenti, S. Rattanasoon, and D. I. Sahman. A search for optical bursts from the repeating fast radio burst FRB 121102. *MNRAS*, 472:2800–2807, December 2017.

C. J. Law, M. W. Abruzzo, C. G. Bassa, G. C. Bower, S. Burke-Spolaor, B. J. Butler, T. Cantwell, S. H. Carey, S. Chatterjee, J. M. Cordes, P. Demorest, J. Dowell, R. Fender, K. Gourdji, K. Grainge, J. W. T. Hessels, J. Hickish, V. M. Kaspi, T. J. W. Lazio, M. A. McLaughlin, D. Michilli, K. Mooley, Y. C. Perrott, S. M. Ransom, N. Razavi-Ghods, M. Rupen, A. Scaife, P. Scott, P. Scholz, A. Seymour, L. G. **Spitler**, K. Stovall, S. P. Tendulkar, D. Titterington, R. S. Wharton, and P. K. G. Williams. A Multi-telescope Campaign on FRB 121102: Implications for the FRB Population. *ApJ*, 850:76, November 2017.

P. Scholz, S. Bogdanov, J. W. T. Hessels, R. S. Lynch, L. G. **Spitler**, C. G. Bassa, G. C. Bower, S. Burke-Spolaor, B. J. Butler, S. Chatterjee, J. M. Cordes, K. Gourdji, V. M. Kaspi, C. J. Law, B. Marcote, M. A. McLaughlin, D. Michilli, Z. Paragi, S. M. Ransom, A. Seymour, S. P. Tendulkar, and R. S. Wharton. Simultaneous X-Ray, Gamma-Ray, and Radio Observations of the Repeating Fast Radio Burst FRB 121102. *ApJ*, 846:80, September 2017.

P. Scholz, L. G. **Spitler**, J. W. T. Hessels, S. Chatterjee, J. M. Cordes, V. M. Kaspi, R. S. Wharton, C. G. Bassa, S. Bogdanov, F. Camilo, F. Crawford, J. Deneva, J. van Leeuwen,

R. Lynch, E. C. Madsen, M. A. McLaughlin, M. Mickaliger, E. Parent, C. Patel, S. M. Ransom, A. Seymour, I. H. Stairs, B. W. Stappers, and S. P. Tendulkar. The Repeating Fast Radio Burst FRB 121102: Multi-wavelength Observations and Additional Bursts. *ApJ*, 833:177, December 2016.

J. M. Cordes, R. S. Wharton, L. G. **Spitler**, S. Chatterjee, and I. Wasserman. Radio Wave Propagation and the Provenance of Fast Radio Bursts. *ArXiv e-prints*, May 2016.

L. G. **Spitler**, P. Scholz, J. W. T. Hessels, S. Bogdanov, A. Brazier, F. Camilo, S. Chatterjee, J. M. Cordes, F. Crawford, J. Deneva, R. D. Ferdman, P. C. C. Freire, V. M. Kaspi, P. Lazarus, R. Lynch, E. C. Madsen, M. A. McLaughlin, C. Patel, S. M. Ransom, A. Seymour, I. H. Stairs, B. W. Stappers, J. van Leeuwen, and W. W. Zhu. A repeating fast radio burst. *Nature*, 531:202–205, March 2016.

L. G. **Spitler**, J. M. Cordes, J. W. T. Hessels, D. R. Lorimer, M. A. McLaughlin, S. Chatterjee, F. Crawford, J. S. Deneva, V. M. Kaspi, R. S. Wharton, B. Allen, S. Bogdanov, A. Brazier, F. Camilo, P. C. C. Freire, F. A. Jenet, C. Karako-Argaman, B. Knispel, P. Lazarus, K. J. Lee, J. van Leeuwen, R. Lynch, S. M. Ransom, P. Scholz, X. Siemens, I. H. Stairs, K. Stovall, J. K. Swiggum, A. Venkataraman, W. W. Zhu, C. Aulbert, and H. Fehrmann. Fast Radio Burst Discovered in the Arecibo Pulsar ALFA Survey. *ApJ*, 790:101, August 2014.

L. G. **Spitler**, K. J. Lee, R. P. Eatough, M. Kramer, R. Karuppusamy, C. G. Bassa, I. Cognard, G. Desvignes, A. G. Lyne, B. W. Stappers, G. C. Bower, J. M. Cordes, D. J. Champion, and H. Falcke. Pulse Broadening Measurements from the Galactic Center Pulsar J1745-2900. *ApJL*, 780:L3, January 2014.

L. G. **Spitler**, J. M. Cordes, S. Chatterjee, and J. Stone. Multimoment Radio Transient Detection. *ApJ*, 748:73, April 2012.

L. G. **Spitler** and S. R. Spangler. Limits on Enhanced Radio Wave Scattering by Supernova Remnants. *ApJ*, 632:932–940, October 2005.

S. R. Spangler and L. G. **Spitler**. An empirical investigation of compressibility in magnetohydrodynamic turbulence. *Physics of Plasmas*, 11:1969–1977, May 2004.

Aaron B. Pearlman, Paul Scholz, Suryarao Bethapudi, Jason W. T. Hessels, Victoria M. Kaspi, Franz Kirsten, Kenzie Nimmo, Laura G. **Spitler**, Emmanuel Fonseca, Bradley W. Meyers, Ingrid Stairs, Chia Min Tan, Mohit Bhardwaj, Shami Chatterjee, Amanda M. Cook, Alice P. Curtin, Fengqiu Adam Dong, Tarraneh Eftekhari, B. M. Gaensler, Tolga Güver, Jane Kaczmarek, Calvin Leung, Kiyoshi W. Masui, Daniele Michilli, Thomas A. Prince, Ketan R. Sand, Kaitlyn Shin, Kendrick M. Smith, and Shriharsh P. Tendulkar. Multiwavelength Constraints on the Origin of a Nearby Repeating Fast Radio Burst Source in a Globular Cluster. *arXiv e-prints*, page arXiv:2308.10930, August 2023.

R. A. Main, S. Bethapudi, V. R. Marthi, M. L. Bause, D. Z. Li, H. H. Lin, L. G. **Spitler**, and R. S. Wharton. Modelling annual scintillation velocity variations of FRB 20201124A. *MNRAS*, 522(1):L36–L41, June 2023.

Fronefield Crawford, T. Joseph W. Lazio, Alexander McEwen, Julia S. Deneva, James M. Cordes, Laura **Spitler**, and Ryan F. Trainor. Measurements of the Crab Pulsar's Giant Radio Pulse Amplitude Power-law Index Using Low-frequency Arecibo and Green Bank Telescope Observations. *ApJ*, 948(1):46, May 2023.

D. M. Hewitt, M. P. Snelders, J. W. T. Hessels, K. Nimmo, J. N. Jahns, L. G. **Spitler**, K. Gourdji, G. H. Hilmarsson, D. Michilli, O. S. Ould-Boukattine, P. Scholz, and A. D. Seymour. Arecibo observations of a burst storm from FRB 20121102A in 2016. *MNRAS*, 515(3):3577–3596, September 2022.

Hsiu-Hsien Lin, Marlon Luis Bause, Suryarao Bethapudi, Dongzi Li, Fang Xi Lin, Robert Main, Visweshwar Ram Marthi, Ue-Li Pen, Laura G **Spitler**, and Robert Wharton. DM-power: an algorithm for high precision dispersion measure with application to fast radio bursts. *arXiv e-prints*, page arXiv:2208.13677, August 2022.

A. Plavin, Z. Paragi, B. Marcote, A. Keimpema, J. W. T. Hessels, K. Nimmo, H. K. Vedantham, and L. G. **Spitler**. FRB 121102: Drastic changes in the burst polarization contrasts with the stability of the persistent emission. *MNRAS*, 511(4):6033–6041, April 2022.

V. R. Marthi, S. Bethapudi, R. A. Main, H. H. Lin, L. G. **Spitler**, R. S. Wharton, D. Z. Li, T. Gautam, U. L. Pen, and G. H. Hilmarsson. Burst properties of the highly active FRB20201124A using uGMRT. *MNRAS*, 509(2):2209–2219, January 2022.

R. P. Eatough, P. Torne, G. Desvignes, M. Kramer, R. Karuppusamy, B. Klein, L. G. **Spitler**, K. J. Lee, D. J. Champion, K. Liu, R. S. Wharton, L. Rezzolla, and H. Falcke. Multi-epoch searches for relativistic binary pulsars and fast transients in the Galactic Centre. *MNRAS*, 507(4):5053–5068, November 2021.

Tilemachos M. Athanasiadis, Marina Berezina, John Antoniadis, David J. Champion, Marilyn Cruces, Laura **Spitler**, and Michael Kramer. A search for pulsar companions around low-mass white dwarfs. *MNRAS*, 505(4):4981–4988, August 2021.

O. Wucknitz, L. G. **Spitler**, and U. L. Pen. Cosmology with gravitationally lensed repeating fast radio bursts. *A&A*, 645:A44, January 2021.

P. Scholz, A. Cook, M. Cruces, J. W. T. Hessels, V. M. Kaspi, W. A. Majid, A. Naidu, A. B. Pearlman, L. G. **Spitler**, K. M. Bandura, M. Bhardwaj, T. Cassanelli, P. Chawla, B. M. Gaensler, D. C. Good, A. Josephy, R. Karuppusamy, A. Keimpema, A. Yu. Kirichenko, F. Kirsten, J. Kocz, C. Leung, B. Marcote, K. Masui, J. Mena-Parra, M. Merryfield, D. Michilli, C. J. Naudet, K. Nimmo, Z. Pleunis, T. A. Prince, M. Rafiei-Ravandi, M. Rahman, K. Shin, K. M. Smith, I. H. Stairs, S. P. Tendulkar, and K. Vanderlinde. Simultaneous X-Ray and Radio Observations of the Repeating Fast Radio Burst FRB $\sim$ 180916.J0158+65. *ApJ*, 901(2):165, October 2020.

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