

# Richard Lärkäng

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Mathematical Sciences  
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## Employment

- 2018– **Associate Senior Lecturer**, *University of Gothenburg*, Sweden, Jan 2018 – .
- 2017 **Guest Lecturer**, *University of Gothenburg*, Sweden, Jun 2017 – Dec 2017.
- 2016–2017 **Postdoctoral Researcher**, *University of Gothenburg*, Sweden, Jun 2016 – May 2017.  
Supported by the Swedish Research Council.
- 2013–2016 **Postdoctoral Researcher**, *University of Wuppertal*, Germany, Dec 2013 – May 2014 and Dec 2014 – May 2016.  
Supported by the Swedish Research Council. Employed by the University of Gothenburg, Sweden
- 2014 **Research Associate**, *University of Adelaide*, Australia, Jun 2014 – Nov 2014.
- 2013 **Temporary Lecturer**, *Chalmers University of Technology*, Sweden, Sep 2013 – Nov 2013.
- 2008–2013 **Doctoral Student in Mathematics**, *Chalmers University of Technology*, Sweden, Aug 2008 – Aug 2013.  
Advisor: Mats Andersson

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## Degrees and titles

- Oct 2018 **Docent in Mathematics**, *University of Gothenburg*, Sweden.
- Feb 2013 **Doctor of Philosophy in Mathematics**, *Chalmers University of Technology*, Sweden.  
Thesis: *Residue currents on singular varieties*.  
Opponent: Alexander Rashkovskii
- Jun 2010 **Licentiate degree in Mathematics**, *Chalmers University of Technology*, Sweden.  
Thesis: *Residue currents on analytic spaces*.  
Opponent: Alain Yger

Jun 2008 **Master of science in Mathematics**, *University of Gothenburg*, Sweden, 2004–2008.

The mathematics program at the University of Gothenburg  
Master thesis: *Integral representations of weakly and strongly holomorphic functions*, advisor: Mats Andersson

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## Grants

- 2017 Starting grant from the Swedish Research Council, *Connections between analysis and topology in the presence of singularities*, 4 years
- 2013 International postdoc grant from the Swedish Research Council, *Analytic methods and tools in the study of singular varieties*, 3 years

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## Publications

- 2020 *Chern forms of hermitian metrics with analytic singularities on vector bundles*, with Hossein Raufi, Martin Sera and Elizabeth Wolcan, *Indiana Univ. Math. J.* (accepted for publication, available at arXiv:1802.06614).
- 2020 *Residue currents and cycles of complexes of vector bundles*, with Elizabeth Wolcan, *Ann. Fac. Sci. Toulouse Math.* (accepted for publication, available at arXiv:1806.06782).
- 2020 *On a mixed Monge-Ampère operator for quasiplurisubharmonic functions with analytic singularities*, with Martin Sera and Elizabeth Wolcan, *Bull. Lond. Math. Soc.* 52 (2020), no. 1, 77–93.
- 2020 *Estimates for the  $\bar{\partial}$ -equation on canonical surfaces*, with Mats Andersson, Jean Ruppenthal, Håkan Samuelsson Kalm and Elizabeth Wolcan, *J. Geom. Anal.* 30 (2020), no. 3, 2974–3001.
- 2019 *A comparison formula for residue currents*, *Math. Scand.* 125 (2019), no. 1, 39–66.
- 2019 *Explicit versions of the local duality theorem in  $\mathbb{C}^n$* , *Illinois J. Math.* 63 (2019), no. 1, 1–45.
- 2019 *The  $\bar{\partial}$ -equation on a non-reduced analytic space*, with Mats Andersson, *Math. Ann.* 374 (2019), no. 1, 553–599.
- 2018 *Residue currents and fundamental cycles*, with Elizabeth Wolcan, *Indiana Univ. Math. J.*, 67 (2018), no. 3, 1085–1114.

- 2018 *Koppelman formulas on affine cones over smooth projective complete intersections*, with Jean Ruppenthal, Indiana Univ. Math. J., 67 (2018), no. 2, 753–780.
- 2018 *Chern forms of singular metrics on vector bundles*, with Hossein Raufi, Jean Ruppenthal and Martin Sera, Adv. Math. 326 (2018), 465–489.
- 2018 *Elementary construction of residue currents associated to Cohen-Macaulay ideals*, with Emmanuel Mazzilli, Ann. Inst. Fourier (Grenoble), 68 (2018), no. 1, 377–391.
- 2016 *Extending holomorphic maps from Stein manifolds into affine toric varieties*, with Finnur Lárusson, Proc. Amer. Math. Soc., 144 (2016), 4613–4626.
- 2016 *Koppelman formulas on the  $A_1$ -singularity*, with Jean Ruppenthal, J. Math. Anal. Appl., 437 (2016), no. 1, 214–240.
- 2015 *Residue currents with prescribed annihilator ideals on singular varieties*, Math. Z., 279 (2015), no. 1-2, 333–358.
- 2014 *Computing residue currents of monomial ideals using comparison formulas*, with Elizabeth Wulcan, Bull. Sci. Math., 138 (2014), no. 3, 376–392.
- 2013 *On the duality theorem on an analytic variety*, Math. Ann., 355 (2013), no. 1, 215–234.
- 2013 *Various approaches to products of residue currents*, with Håkan Samuelsson, J. Funct. Anal., 264 (2013) no. 1, 118–138.
- 2012 *Residue currents associated with weakly holomorphic functions*, Ark. Mat., 50 (2012), no. 1, 135–164.

## Preprints

- 2020 *The  $\bar{\partial}$ -equation for  $(p, q)$ -forms on a non-reduced analytic space*, with Mats Andersson, Mattias Lennartsson and Håkan Samuelsson Kalm, arXiv:2002.01797

## Teaching and supervision

As a lecturer and course coordinator:

- fall 2020 Calculus, LMA401/MVE575, Chalmers University of Technology
- spring 2020 Complex Analysis in Several Variables, MMA150, University of Gothenburg
- fall 2019 Multivariable calculus, LMA017, Chalmers University of Technology

- fall 2018 Multivariable calculus, LMA017, Chalmers University of Technology
- fall 2017 Analysis and Linear Algebra, MMGF11, part 2, University of Gothenburg
- fall 2017 Multivariable calculus, LMA017, Chalmers University of Technology
- fall 2016 Multivariable calculus, LMA017, Chalmers University of Technology
- fall 2013 Linear Algebra, MVE275, Chalmers University of Technology

Other:

- spring 2019 Supervision of Erasmus internship (similar to a bachelors thesis), The Riemann Roch theorem, joint with David Witt-Nyström
- 2019– Cosupervisor of PhD student Mattias Lennartsson
- spring 2013 Supervision of bachelors thesis, The Riemann mapping theorem, joint with Hossein Raufi
- 2008–2013 Teaching assistant and Matlab supervision in courses in linear algebra, single- and multi-variable calculus and Fourier analysis, Chalmers University of Technology

## Other merits

- Coorganizer of the colloquium at Mathematical Sciences at Chalmers / University of Gothenburg, 2017–
- Member of the mathematics library buying committee at Chalmers / University of Gothenburg, 2016–
- Cochairman of the PhD student council for PhD students at Mathematical Sciences at Chalmers / University of Gothenburg, 2011–2013
- Member of the recruitment committee for new PhD students in mathematics at Chalmers / University of Gothenburg, 2011 & 2012
- Coorganizer of the conference "KAUS 2011" (Komplex Analys Utan Seniorer), a conference for PhD students in complex analysis from the Nordic countries. Göteborg, January 21-23, 2011