

# Curriculum Vitae – Eirik Berge

## PERSONAL DATA

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NATIONALITY: Norwegian  
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## EDUCATION

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- 2018 - 2022 **Ph.D. Degree in Mathematics**  
[Norwegian University of Science and Technology \(NTNU\)](#)  
Supervisors: Franz Luef (main) and Felix Voigtländer (secondary).  
Topic of Thesis: *Large Scale Geometry of Decomposition Spaces*.
- 2016 - 2018 **Master Degree in Mathematics**  
[University of Bergen \(UiB\)](#)  
Supervisors: Erlend Grong (main) and Irina Markina (secondary).  
Topic of Thesis: *Classification of sub-Riemannian Model Spaces*.
- 2013 - 2016 **Bachelor Degree in Mathematics**  
[University of Bergen \(UiB\)](#)  
Supervisors: Alexander Vasiliev (main) and Irina Markina (secondary)  
Topic of Thesis: *The Diffeomorphism Group of the Circle*.

## PAPERS

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### [PUBLISHED OR ACCEPTED PAPERS \(2\)](#)

- Dec 2020 **On  $G_2$  and Sub-Riemannian Model Spaces of Step and Rank Three**  
Accepted: *Mathematische Zeitschrift*.  
Co-authored with *Erlend Grong*.  
[arXiv version](#)      [Researchgate version](#)
- Nov 2020 **Interpolation in Wavelet Spaces and the HRT-Conjecture**  
Accepted: *Journal of Pseudo-Differential Operators and Applications*.  
Single authored paper.  
[arXiv version](#)      [Researchgate version](#)

### [PREPRINTS \(3\)](#)

- Jan 2020 **The Affine Wigner Distribution**  
Co-authored with *Stine Marie Berge* and *Franz Luef*.  
[arXiv version](#)      [Researchgate version](#)

- Aug 2019    **Alpha-Modulation Spaces on Stratified Lie Groups**  
Single authored paper.  
[arXiv version](#)      [Researchgate version](#)
- Mar 2019    **A Large Scale Approach to Decomposition Spaces**  
Co-authored with *Franz Luef*.  
[arXiv version](#)      [Researchgate version](#)

## TEACHING EXPERIENCE

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### NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY - TRONDHEIM

- OCT 2020 | **Online Course:** *Created a video course on Numpy & Matplotlib.*
- AUG 2020 | **Online Course:** *Created a six-hour video course on Python programming.*
- MAY 2020 | **Course:** *Gave a two-day course on Python programming for employees.*
- JAN 2020 | **Course:** *Gave a two-day course on MATLAB programming for engineers.*
- AUG - DEC 2019 | **Lecturer:** *Mathematical Methods 1 (84 hours).*
- AUG 2019 | **Lecturer:** *Laplace Transformations and Complex Analysis (15 hours).*
- JUL 2019 | **Organizer:** *Summer School in Analysis, Geometry and PDE, Nordfjordeid.*
- JAN - MAY 2019 | **Plenary Exercise Session:** *Multivariable Calculus.*
- AUG - DEC 2018 | **Assisting Coordinator:** *Single Variable Calculus.*

### NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY - ÅLESUND

- FEB 2020 | **Course:** *Gave a two-day course on MATLAB programming at NTNU Ålesund.*

### WESTERN NORWAY UNIVERSITY OF APPLIED SCIENCES

- DEC 2017 | **Course:** *One-day TEKNA crash-course in Elementary Mathematics.*
- NOV 2017 | **Course:** *One-day TEKNA crash-course in Mathematics for Engineers.*

## UNIVERSITY OF BERGEN

- AUG - DEC 2017 | **Teaching Assistant:** *Complex Analysis*.
- JAN - MAY 2017 | **Teaching Assistant:** *Single Variable Calculus*.
- AUG - DEC 2016 | **Teaching Assistant:** *Real Analysis*.
- AUG - DEC 2016 | **Teaching Assistant:** *Single Variable Calculus for Scientists*.
- AUG 2016 | **Teaching Assistant:** *Prerequisites for Single Variable Calculus*.
- MAY 2016 | **Course:** *One-day TEKNA crash-course in Single Variable Calculus*.
- JAN - MAY 2016 | **Teaching Assistant:** *Single Variable Calculus*.
- DEC 2015 | **Course:** *One-day TEKNA crash-course in Single Variable Calculus*.
- AUG - DEC 2015 | **Teaching Assistant:** *Single Variable Calculus*.
- AUG 2015 | **Introductory Organizer:** *Mathematics and Statistics Students*.
- JAN - MAY 2015 | **Teaching Assistant:** *Linear Algebra*.
- DEC 2014 | **Course:** *One-day TEKNA crash-course in Calculus for Scientists*.
- 2014 - 2017 | **Teaching Assistant:** *ENT3R Science Training*.
- AUG - DEC 2014 | **Teaching Assistant:** *Single Variable Calculus for Scientists*.
- AUG 2014 | **Teaching Assistant:** *Prerequisites for Single Variable Calculus*.

## PRESENTED WORK

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- OCT 2020 | Title: **Wavelet Spaces as Reproducing Kernel Hilbert Spaces**  
Type: Conference Talk (15 minutes).  
[Analysis and Geometry in Norway](#).  
Place: University of Bergen.
- SEP 2020 | Title: **An Introduction to Coorbit Theory**  
Type: Seminar Course (8 hours).  
[Time-Frequency Seminar](#).  
Place: Norwegian University of Science and Technology.
- FEB 2020 | Title: **Wavelet Spaces and the HRT Conjecture**.  
Type: Seminar Talk (1 hour).  
[Operator Algebra Seminar](#).  
Place: Norwegian University of Science and Technology.

NOV 2019	<p>Title: <b>The Affine Wigner Distribution.</b></p> <p>Type: Seminar Talk (2 hours).</p> <p><a href="#">Operator Algebra Seminar.</a></p> <p>Place: Norwegian University of Science and Technology.</p>
JUN 2019	<p>Title: <b>Embeddings of Function Spaces in Time-Frequency Analysis.</b></p> <p>Type: Poster.</p> <p><a href="#">Aspects of Time-Frequency Analysis.</a></p> <p>Place: Politecnico di Torino.</p>
MAR 2019	<p>Title: <b>Large Scale Aspects of Decomposition Spaces.</b></p> <p>Type: Seminar Talk (2 hours).</p> <p><a href="#">Operator Algebra Seminar.</a></p> <p>Place: Norwegian University of Science and Technology.</p>
FEB 2019	<p>Title: <b>Decomposition Spaces From a Metric Geometry Standpoint.</b></p> <p>Type: Seminar Talk (2 hours).</p> <p><a href="#">Analysis Seminar.</a></p> <p>Place: University of Bergen.</p>
SEP 2018	<p>Title: <b>The Large Scale Structure of Decomposition Spaces.</b></p> <p>Type: Conference Talk (10 minutes).</p> <p><a href="#">National Mathematicians meeting, PhD day.</a></p> <p>Place: University of Bergen.</p>
JUL 2018	<p>Title: <b>In Search of Sub-Riemannian Geometries with Maximal Symmetry.</b></p> <p>Type: Workshop Talk (2 hours).</p> <p><a href="#">Sub-Riemannian Structures on Lie Groups, Differential Forms and PDE's.</a></p> <p>Place: University of Bergen.</p>
MAY 2018	<p>Title: <b>Classification of SR-model spaces with step and rank equal to three.</b></p> <p>Type: Seminar Talk (2 hours).</p> <p><a href="#">Analysis Seminar.</a></p> <p>Place: University of Bergen.</p>
JAN 2018	<p>Title: <b>Sub-Riemannian Model Spaces.</b></p> <p>Type: Conference Talk (1 hour).</p> <p><a href="#">Connections Between Complex, Harmonic, and Stochastic Analysis.</a></p> <p>Place: Fields Institute, University of Toronto.</p>
SEP 2017	<p>Title: <b>The Geometry of Principal Bundles.</b></p> <p>Type: Seminar Talk (4 hours).</p> <p><a href="#">Analysis Seminar.</a></p> <p>Place: University of Bergen.</p>
APR 2017	<p>Title: <b>Fredholm Operators and their Relation to the Calkin Algebra.</b></p> <p>Type: Seminar Talk (2 hours).</p> <p><a href="#">Analysis Seminar.</a></p> <p>Place: University of Bergen.</p>
APR 2016	<p>Title: <b>Fréchet Spaces as Model Spaces for Diffeomorphism Groups.</b></p> <p>Type: Seminar Talk (1 hour).</p> <p><a href="#">Analysis Seminar.</a></p> <p>Place: University of Bergen.</p>

## TRAVELS, PROJECTS, AND GRANTS

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- I have received two separate grants from the project *BFS/TFS-network 2018-2022: Pure Mathematics in Norway* during my Ph.D. to visit the University of Vienna for one month. The first time I visited Franz Luef in September 2018, while the second I visited David Rottensteiner in May 2019.
- I was part of the project "Sub-Riemannian structures on Lie groups, differential forms and PDE" between 2016 and 2018 which was a collaboration between the Analysis Institute at the Leibniz University of Hanover and the Analysis Group at the University of Bergen. The goal of the project was to understand, among other things, geometric differential operators on manifolds with additional geometric structure. More information about the project can be found at <http://folk.uib.no/ima083/NFR-DAAD.html> or by contacting the leader of the project Irina Markina at [irina.markina@math.uib.no](mailto:irina.markina@math.uib.no).
- I received a grant from *Norsk Matematisk Forening (Norwegian Mathematical Union)* during my master degree. This was used to visit Université Paris-Sud in France to visit Erlend Grong, who was employed there at the time.
- I have received two grants from *Frøken Lina Asbjørnsens stipendiefond*, an organization that provides financial support to skillful students in science and mathematics.

## PROGRAMMING SKILLS

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Python, NumPy, pandas, Matplotlib, Seaborn, MATLAB, HTML, CSS, Sass, JavaScript, NodeJS, React.

## OTHER SKILLS

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- I was in the committee of cultural student affairs throughout 2014, where we delegated student funds to organizations related to student welfare.
- During the spring of 2014 I was in the social-committee of the faculty of mathematics at UiB where we arranged trips, social gatherings, etc.

## ATTENDED CONFERENCES

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JULY 2019	Analysis, Geometry and PDE's, Nordfjordeid, Norway. <a href="https://wiki.math.ntnu.no/nordfjordeid2019/start">https://wiki.math.ntnu.no/nordfjordeid2019/start</a>
JUNE 2019	Aspects of Time-Frequency Analysis, Torino, Italy. <a href="http://www.atfa19.polito.it/">http://www.atfa19.polito.it/</a>
OCTOBER 2018	One Day Seminar - New Trends in Non-Commutative Geometry, Oslo, Norway. <a href="https://www.puremath.no/meetings/">https://www.puremath.no/meetings/</a>
OCTOBER 2018	One Day Seminar - Geometry, Analysis and PDE, Bergen, Norway. <a href="https://www.puremath.no/meetings/">https://www.puremath.no/meetings/</a>
SEPTEMBER 2018	National Mathematics Meeting, Bergen, Norway. <a href="https://www.uib.no/matematikermote">https://www.uib.no/matematikermote</a>
JULY 2018	PCMI Summer School in Harmonic Analysis, Utah, USA. <a href="https://www.ias.edu/pcmi">https://www.ias.edu/pcmi</a>
JUNE 2018	Strobl - Conference on Harmonic Analysis and Applications, Strobl, Austria. <a href="https://www.univie.ac.at/projektservice-mathematik/e/?event=strobl18">https://www.univie.ac.at/projektservice-mathematik/e/?event=strobl18</a>
MARCH 2018	Winter School: Geometry, Analysis and Physics, Geilo, Norway. <a href="http://serre.mat-stat.uit.no/Geilo/">http://serre.mat-stat.uit.no/Geilo/</a>
FEBRUARY 2018	Sub Riemannian Geometry and Beyond, Jyväskylä, Finland <a href="http://research.jyu.fi/geomeg/workshop/2018/">http://research.jyu.fi/geomeg/workshop/2018/</a>
JANUARY 2018	Connections between Complex, Harmonic, and Stochastic Analysis, Toronto, Canada. <a href="http://www.fields.utoronto.ca/activities/17-18/harmonic-stochastic">http://www.fields.utoronto.ca/activities/17-18/harmonic-stochastic</a>
OCTOBER 2017	Journées sous-Riemanniennes, Grenoble, France. <a href="https://journées-sr2017.sciencesconf.org/">https://journées-sr2017.sciencesconf.org/</a>
JUNE 2017	New trends on Analysis and Geometry in Metric Spaces, Levico, Italy. <a href="https://cirm.fbk.eu/events/cime-cirm-course-new-trends-analysis">https://cirm.fbk.eu/events/cime-cirm-course-new-trends-analysis</a>
FEBRUARY 2017	Geometric and Singular Analysis, Potsdam, Germany. <a href="http://www.math.uni-potsdam.de/professuren/analysis/GSA2017">http://www.math.uni-potsdam.de/professuren/analysis/GSA2017</a>
MAY 2016	Geometric Analysis in Control and Vision Theory, Voss, Norway. <a href="http://folk.uib.no/ava004/Voss2016/index.html">http://folk.uib.no/ava004/Voss2016/index.html</a>
JUNE 2015	Nordfjordeid Summer school 2015: Lie groups and pseudogroups actions: From classical to differential invariants, Nordfjordeid, Norway. The website no longer exists