



Nathan Hugh Barr

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#### Address

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# Nathan Hugh Barr

**Profile** My past jobs have been more focused on academia and teaching but i am a quick learner and i can immerse myself quickly in different projects. I have assisted research concerning the restructuring in block copolymer thin films at the Cornell High Energy Synchrotron Source(CHESS). We performed Grazing incidence small angle x-ray scattering(GISAXS) measurements continuously over a seven day period. I also have experience with Small angle x-ray scattering(SAXS), ellipsometry and dynamic light scattering. I am not shy when receiving constructive criticism and i am able to incorporate them immediately. I work well in a team environment.

## Education

### 2016 - 2019, Roskilde University

Master of Science in Physics and Mathematics

Master Thesis:

- Title: *Optimising the thickness determination of homopolymers and diblock copolymers using optical spectral reflectance during solvent vapour annealing.*
- In this master thesis, the homopolymers Polystyrene and Polyisoprene thin film wafers and the diblock-copolymer Polystyrene-b-polyisoprene thin film wafers thickness were investigated during solvent vapour annealing using toluene. The Fresnel models were fitted to the reflectance data measured using the optical spectral reflectance measurement technique and the fitting results and fitted thickness were analysed.
- Grade: 10

### 2013 - 2016, Roskilde Universitet

Bachelor of Natural Science in Physics and Mathematics

Bachelor project:

- Title: *Mathematical competencies gained in Danish High School Education from 1958 to the present - using integrals as a case study.*
- In this project we attempted to measure which mathematical competences were strengthened and weakened through out three periods during a period from 1958 to the present. We used the formal theory of integrals as a case study.
- Grade: 10

## Experience and Volunteering

### January 2015 - December 2018, Private tutor, My academy

Mathematics and Physics tutor working primarily with students who found the subjects difficult. My job was to asses and correct their way of thinking in the subjects while creating a learning environment best suited to their learning outcomes. I am able to convey ideas clearly and coach the student in ways to handle problems and exam situations. I also have experience assessing the students pitfalls and planning new sessions.

### October 2015 - December 2018, Science Show Representative

One of the founding students of RUC's science show. Responsible for preparation and planning of new experiments and shows at various Danish high schools. The competences that i have gained through being a science show representative are the following. Comfortable speak in public and being able to engage audiences. I have didactic competence in setting the explanation of concepts in science for different age groups. I am able to uphold agreements and meet deadlines.



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### June 2017 - June 2018, Co-creator at Roskilde Festival, Volunteering

I have helped build and take down art exhibitions, stages and stage areas, working 100+ hours over a 14 day period. My jobs have also included driving telehandlers transporting heavy goods and painting various installations.

## Technical skills

### Programming and systems

- GNU Octave
- MatLab

### Computer Software

- Linux
- LaTeX
- Microsoft Office

## Language

### Danish

- Professional(Reading,Speaking) - Intermediate(Writing)

### English

- Mothertounge

## Interests

### Professional

Mathematical Modeling, Computational Physics and programming, Experimental Physics: Small angle x-ray scattering, Grazing incidence small angle x-ray scattering, Dynamic light scattering, Reflectometry

### Personal

I am a 29 year old Australian who is both an Australian and Danish citizen and i have lived in Danmark for 10 years. My hobbies are running, bikepacking and playing bass guitar. A big part of my summer is volunteering at Roskilde festival building the Pavilion stage and the Pavilion area. When winter rolls around i enjoy skiing.