

## Curriculum Vitae

Willem Adriaan Salm  
willem.salm.19@ucl.ac.uk

4 Park Avenue,  
London NW11 7SJ  
United Kingdom

## Studies

**University College London** - aug. 2019 – present

**Heriot Watt University Edinburgh** - sept. 2018 – aug. 2019

**Doctor of Philosophy Mathematics**

Supervisor: Dr. Lorenzo Foscolo

*The overall aim of my project is the development of constructions of complete non-compact manifolds with special holonomy and non-maximal volume growth and a thorough study of their geometry.*

**Utrecht University** - sept. 2015 – 2018

**Double Masters honours Mathematical Sciences and Theoretical Physics**

Average: 7.92 of 10

Thesis: The Atiyah-Singer index theorem and its applications to anomalies in particle physics. Supervisors: Prof. dr. Eric Laenen and dr. Gil Cavalcanti.

*In my thesis I reviewed the topological properties of the index of a Dirac operator, i.e. I showed that the dimension of the kernel and co-kernel are related to the  $\hat{A}$ -genus of the manifold. In this proof I related Analysis, Geometry and Algebraic topology. At the same time I applied Fujikawa's method on spin  $\frac{1}{2}$ -particles and show that the classical chiral conservation, do not necessarily hold in quantum field theory. Both proof are remarkably similar and hence its makes a bridge between mathematics and physics.*

**Utrecht University** - sept. 2012 – jul. 2015

**Double Bachelors Mathematics and Physics**

Average: 8.34 of 10, **Cum Laude**

Thesis: The Gauss-Bonnet theorem. Supervisor: Dr. G.R. Cavalcanti.

*In this thesis I proved a relation between the curvature of a surface and the number of holes in that surface, i.e. the Euler characteristic. Hence I showed a relation between the local differential properties and the global topological properties of a surface.*

## Studies

**Evangelische Hogeschool Amersfoort** - sept. 2011 – jul. 2012

*Sabbatical*

In this year I followed extra courses, for instance on the philosophy of science.

**SG Jacobus Fruytier Apeldoorn** - sept. 2005 – jul. 2011

*Gymnasium (highest high school level)*

Average (math/chem/phys/cs): 9.5 of 10

In the first three years of high school I followed a program where I all my courses were in English. I finished this program with a Cambridge ESOL level 1 certificate.

## Work experience

**Minded Digitaal Kantoor B.V.** - jan. 2010 – sept. 2018

*Software engineer*

Digitaal Kantoor is an online accounting program for medium and small businesses. As software engineer I applied my skills of problem solving and analytic thinking to create multiple API implementations in websites and apps.

**Artists in Science** - sept. 2012 – apr. 2015

**Co-founder**

Artists in Science was a start-up with its main product 'slimsporen'. It was based on a research project about car-navigation I did during high school. I developed an app that could calculate the most economical way to travel using public transport.

## Activities

**De Basis Apeldoorn** - end 2010 – present

*Volunteer*

As a volunteer in my church I helped in a broad range of activities. For example, I set up a live streaming service so people can follow the sermons on the internet.

**A-Eskwadraat** - dec. 11<sup>th</sup> 2014

*Treasurer of Mathematics Symposium 2014*

We organized a mathematics symposium about unsolved conjectures. My role in this was treasurer, but I also took responsibility in the design and branding of the symposium.

## Language

Dutch is my mother tongue, but I am also good in English in reading, speaking and writing.

## Teaching

During my year in Edinburgh I followed the teaching training program of the Maxwell Institute of Mathematics. I applied my skills as a teaching assistant, because between Januari and March 2019 I have provided tutorials for the first year undergraduate course Discrete Mathematics.