20-24 JANUARY 2025

# NUMBER THEORY CONFERENCE

STELLENBOSCH UNIVERSITY

# About

## The number theory conference

The Stellenbosch Number Theory Conference, held every two years, serves as a platform to bring international experts to South Africa, fostering collaboration and enhancing both research and postgraduate experiences. The conference broadly focuses on number theory and arithmetic geometry, without being confined to a single specialized area. Topics covered often span a wide range, including elliptic curves, modular forms, function field arithmetic, rational points on varieties, model-theoretic approaches, and more, reflecting the diversity and richness of the field.

## Organizing committee

| | |
|---|---|
| Dirk Basson, | Stellenbosch University |
| Naina Ralaivaosaona, | Stellenbosch University |
| Sophie Marques, | Stellenbosch University |
| Florian Luca, | Stellenbosch University |
| Fabien Pazuki, | University of Copenhagen, Denmark |

**Talks** will take place in Room 1005 of the Department of Mathematical Sciences and Industrial Psychology at Stellenbosch University, located directly opposite the main entrance (refer to the map on p.24 if needed).

**Coffee breaks** will be provided in the staff room of the Department of Mathematical Sciences.

Eduroam Wi-Fi will be available throughout the conference.

The **conference dinner**, offered to the conference speakers, will be held at Alluvia Restaurant.

## Monday, 20 of January 2025

| | | | |
|---|---|---|---|
| 9 :00–9 :20 | **Registration** | | |
| 9 :20–9 :30 | **Welcome remarks** | | |
| 9 :30–10 :30 | | **Tim Browning**<br>IST Austria | Pairs of commuting matrices |
| 10 :30–11 :00 | **Coffee** | | |
| 11 :00–11 :40 | | **Laszlo Szalay**<br>University of Sopron, Hungary | Self-avoiding walks |
| 11 :40–12 :20 | | **Attila Berczes**<br>University of Debreceni, Hungary | Some Diophantine problems connected to binary recurrences |
| 12 :20–14 :00 | **Lunch** | | |
| 14 :00–14 :40 | | **István Pink**<br>University of Debreceni, Hungary | On the Diophantine equation $F_n^x + F_k^x = F_m^y$ |
| 14 :40–15 :20 | | **Matteo Verzobio**<br>IST Austria | Sieve methods for strong divisibility sequences |
| 15 :20–16 :00 | **Coffee** | | |
| 16 :00-17 :00 | | **Bruno R. Chiarellotto**<br>University of Padova, Italy | Alexander Grothendieck and the modern algebraic arithmetic geometry<br>**Location : Nelsie Cinema** |
| 17 :00–18 :00 | **Refreshments** | | |

## Tuesday, 21 of January 2025

| | | | |
|---|---|---|---|
| 9 :30–10 :30 | | **Lajos Hajdu**<br>University of Debreceni, Hungary | Representing integers by binary recurrence sequences |
| 10 :30–11 :00 | **Coffee** | | |
| 11 :00–11 :40 | | **Daniella Moore**<br>Stellenbosch University, South Africa | Distributive decomposition of near-vector spaces |
| 11 :40–12 :20 | | **Taboka Prince Chalebgwa**<br>University of Pretoria, South Africa | Liouville meets Erdos |
| 12 :20–14 :00 | **Lunch** | | |
| 14 :00–14 :40 | | **Liam Baker**<br>Stellenbosch University, South Africa | Axiomatic Summation and Limiting methods |
| 14 :40–15 :20 | | **Federico Bambozzi**<br>Universita degli Studi di Padova, Italy | Derived non-Archimedean analytic geometry |
| 15 :20–15 :50 | **Coffee** | | |
| 15 :50-16 :30 | | **Kevin Destagnol**<br>Paris-Saclay University, Orsay, France | The quadratic Manin-Peyre conjecture for del Pezzo surfaces |

## Wednesday, 22 of January 2025

| | | | |
|---|---|---|---|
| 9 :30–10 :30 | | **Florian Breuer**<br>University of Newcastle, Australia | Coefficients of modular polynomials |
| 10 :30–11 :00 | **Coffee** | | |
| 11 :00–12 :00 | | **Richard Griffon**<br>Universite Clermont Auvergne, France | A parallelogram inequality for abelian varieties over function fields |
| 12 :00–12 :40 | | **Dennis Kinoti Gikunda**<br>Stellenbosch University, South Africa | The Asymptotic Analysis of Norms in Integer Partitions |
| 12 :40–14 :00 | **Lunch** | | |
| 14 :00–17 :00 | **Free afternoon** | | |

## Thursday, 23 of January 2025

| | | | |
|---|---|---|---|
| 9 :30–10 :30 | | **Simon Kristensen**<br>Aarhus University, Denmark | On the distribution of sequences of the form $(q_n y)$ |
| 10 :30–11 :00 | **Coffee** | | |
| 11 :00–11 :40 | | **Bruno Chiarellotto**<br>Universita degli Studi di Padova, Italy | Families of Varieties |
| 11 :40–12 :10 | | **Stephane Vinatier**<br>University of Limoges, France | Alignments in Ulam's Spiral |
| 12 :10–14 :00 | **Lunch** | | |
| 14 :00–14 :40 | | **Joseph Atalaye**<br>Stellenbosch University, South Africa | The multiplicative structure of the set of integers modulo a power of a prime. |
| 14 :40–15 :20 | | **Abdulaziz Mohammed Alanazi**<br>Tabuk University, Saudi Arabia | Some properties of overpartitions into nonmultiples of two integers |
| 15 :20–15 :40 | **Coffee** | | |
| 15 :40-16 :20 | | **Florian Luca**<br>Stellenbosch University, South Africa | Factorials which are ratios of products of Fibonacci numbers |
| 18 :00–21 :00 | **Conference dinner** | | |

## Friday, 24 of January 2025

| | | | |
|---|---|---|---|
| 9 :30–10 :30 | | **Augustine Munagi**<br>University of the Witswatersrand, South Africa | Refining Overlined Parts in Overpartitions via Residue Classes |
| 10 :30–11 :10 | | **Alexis Lucas**<br>Universite de Caen Normandie, France | Wieferich primes and Drinfeld modules |
| 11 :10–11 :30 | **Coffee** | | |
| 11 :30–12 :10 | | **Henry (Maya) Thackeray**<br>University of Pretoria, South Africa | The exponential local-global principle and power residue symbols |
| 12 :10–12 :50 | | **Darlison Nyirenda**<br>University of the Witswatersrand, South Africa | Partitions with parity restrictions on parts |
| 12 :50–14 :00 | **Lunch** | | |
| 14 :00–17 :00 | **Free afternoon** | | |

# List of Abstracts – Talks

## Monday, 20 of January 2025

### 9 :30–10 :30

### Pairs of commuting matrices

***Tim Browning***

IST Austria

I'll discuss commuting varieties and a new upper bound for the number of pairs of commuting $n \times n$ matrices with integer entries and height at most $T$, as $T$ tends to $\infty$. The approach uses Fourier analysis and mod $p$ information. This is joint work with Will Sawin and Victor Wang.

### 11 :00–11 :40

### Self-avoiding walks

***Laszlo Szalay***

University of Sopron, Hungary

There is given a connected graph. A self-avoiding walk on the graph is a walk never visits the same vertex more than once. One of the central problems in this area is to consider the number of distinct self-avoiding walks of a prescribed length starting at the origin on the integer lattice $\mathbb{Z}^d$.

This problem seems to be very intactable in general. We investigated some specific cases, and discovered interesting properties related to the enumerative statements.

The results are joint work with H. Belbachir, L. Major, L. Németh, and A. Pahikkala.

## 11 :40–12 :20

## Some Diophantine problems connected to binary recurrences

***Attila Berczes***

University of Debreceni, Hungary

Binary recurrence sequences are in the focus of research for a long time. In the frame of Diophantine number theory researchers were investigating divisibility properties of members of recurrence sequences and many more Diophantine properties of them. However, there are several Diophantine problems and Diophantine equations which are not directly connected to recurrences, but linear recurrences (and theorems proved about them) appear as tools in the solution of these problems.

In my talk I will present some results on Diophantine equations and problems containing linear recurrence sequences, and also some diophantine results, where the linear recurrences appear only in the proof of the results.

## 14 :00–14 :40

## On the Diophantine equation $F_n^x + F_k^x = F_m^y$

***István Pink***

University of Debreceni, Hungary

It is conjectured that the Diophantine equation

$$a^x + b^y = c^z \tag{0.1}$$

has only finitely many positive integer solutions $(a^x, b^y, c^z)$ with $\gcd(a, b, c) = 1$ and for which $1/x + 1/y + 1/z < 1$. For fixed $x, y, z$ subject to the above condition this is a well-known result of Darmon and Granville $[1]$. While this result is only of theoretical importance, there are definitive results in the case when $x = y = z \geq 3$ (see the famous result of Wiles $[7]$) or in the case when $x = y$ and $z \in \{2, 3\}$ (see the results of Darmon and Merel $[2]$ and Poonen $[6]$). In this talk we solve completely equation (0.1) in the case $x = y$ except that we assume that all bases are Fibonacci numbers, that is we find all solutions of the Diophantine equation $F_n^x + F_k^x = F_m^y$, where $\{F_n\}_{n\geq 0}$ is the Fibonacci sequence. This way we extend some earlier results of Marques and Togbé $[5]$, Luca and Oyono $[4]$ and Hirata-Kohno and Luca $[3]$. This is a joint work with A. Bérczes, L. Hajdu and F. Luca.

**References**

$[1]$ H. Darmon and A. Granville *On the equations* $z^m = F(x, y)$ *and* $Ax^p + By^q = Cz^r$. Bull. London Math. Soc. **27** (1995), 513–543.

$[2]$ H. Darmon and L. Merel *Winding quotients and some variants of Fermat's last theorem*, J. Reine Angew. Math. **490** (1997) 81–100.

$[3]$ N. Hirata-Kohno and F. Luca, *On the Diophantine equation* $F_n^x + F_{n+1}^x = F_m^y$. Rocky Mountain J. Math. **45**/2 (2015), 509–538.

$[4]$ F. Luca and R. Oyono, *An exponential Diophantine equation related to powers of two consecutive Fibonacci numbers*. Proc. Japan Acad. Ser. A Math. Sci. **87** (2011), 45–50.

$[5]$ D. Marques and A. Togbé, *On the sum of powers of two consecutive Fibonacci numbers*. Proc. Japan Acad. Ser. A Math. Sci. **86** (2010), 174–176.

$[6]$ B. Poonen, *Some Diophantine equations of the form* $x^n + y^n = z^m$, Acta Arith. 86 (1998), 193–205.

$[7]$ A. Wiles, *Modular elliptic curves and Fermat's last theorem*. Ann. of Math. (2) 141 (1995), no. 3, 443–551

## 14 :40–15 :20

### Sieve methods for strong divisibility sequences

***Matteo Verzobio***

IST Austria

In this talk, we will investigate strong divisibility sequences and produce lower and upper bounds for the density of integers in the sequence which only have (somewhat) large prime factors. We will focus in particular on the special cases of Fibonacci numbers and elliptic divisibility sequences. This is a joint work with Tim Browning.

## 16 :00–17 :00

### Alexander Grothendieck and the modern algebraic arithmetic geometry

***Bruno R. Chiarellotto***

University of Padova, Italy

Starting from the life of Alexander Grothendieck, a giant among the mathematicians of the 20th century (life full of interesting steps in itself), we will try to introduce the audience to his new way of thinking geometry via algebra and number theory as a motive played by different instruments.

# Tuesday, 21 of January 2025

## 9 :30–10 :30

## Representing integers by binary recurrence sequences

*Lajos Hajdu*

University of Debrecen, Hungary

In the talk we present various new results concerning binary recurrence sequences.

First, we discuss estimates concerning the growth of such sequences and indices of zero terms in such sequences. Certainly, such results are well-known from the literature. However, our bounds depend on fewer parameters of the sequences than the earlier bounds, and we show that the dependence on these parameters is already necessary.

Then, restricting our attention to Lucas sequences $U_n$, we give lowerand upper bounds for the cardinalities of the sets

$$\{x \in \mathbb{Z} : 0 \leq x \leq N \text{ and } x = |U_n| \text{ for some Lucas sequence } U\}.$$

The lower and upper bounds are rather sharp, they are of the same magnitude. In the proofs we combine several tools, including elementary arguments, Baker's method, extensions of theorems of Erdős and Mahler, and Lewis and Mahler concerning representability of integers by binary forms $G(x, y)$ to representations of the type $G(x^2, y) = k$, and certain properties of the Fibonacci polynomials.

The new results presented are joint with R. Tijdeman.

## 11 :00–11 :40

## Distributive decomposition of near-vector spaces

***Daniella Moore***

Stellenbosch University, South Africa

André proved that any near-vector space can be decomposed as a direct sum of regular near-vector spaces. In this talk, we will show how each regular near-vector space can, in turn, be decomposed into vector spaces over the field of distributive elements of a specific near-field. We will demonstrate that this new decomposition is foundational to the theory of near-vector spaces by establishing that the dimension of each summand in this direct sum, taken over the distributive field, matches the dimension of the corresponding regular near-vector space summand. This is a joint work with Leandro Boonzaaier and Sophie Marques.

**References**

[1] Boonzaaier, L, Marques, S and Moore, D, Distributive decomposition of near-vector spaces, Journal of Algebra and Its Applications, doi : 10.1142/S021949882650088X (published online in 2024).

## 11 :40–12 :20

## Liouville meets Erdos

***Taboka Prince Chalebgwa***

University of Pretoria, South Africa

A result of Erdos from the 1960s says that every real number can be decomposed into a sum (and a product) of two Liouville numbers. This is particularly surprising (from a "metrical" perspective) since the set of Liouville numbers has (Lebesgue) measure zero. Erdos asked if "in a certain sense" the Liouville numbers are the smallest set with this property. In joint work with Sid Morris, we addressed this problem. Along the way, we also "extend" the classical result, to show that, every positive real number (except the number 1) can be expressed as a "power tower" of two Liouville numbers.

## 14 :00–14 :40

### Axiomatic Summation and Limiting methods

***Liam Baker***

Stellenbosch University, South Africa

The conventional method of summing an infinite series of numbers (by taking the limit of the sequence of partial sums) is, in some ways, deficient. For many years, scientists have encountered situations where an infinite series which is not summable using the conventional method nevertheless seems to be associated with a specific finite value ; this occurs in the practices of renormalisation and regularisation in physics, as well as in the various alternative summations methods in mathematics, such as Abel summation, Cesàro summation, Borel summation, et cetera. Most of the study of these summation methods have been on explicit methods and the relationships between them. In this talk, we propose a study of the properties of these summation methods from an axiomatic perspective, in particular in which series can have at most one summation value given a list of axioms.

## 14 :40–15 :20

### Derived non-Archimedean analytic geometry

***Federico Bambozzi***

Universita degli Studi di Padova, Italy

I will explain some recent progress in the development of a theory of derived geometry for non-Archimedean analytic spaces. This theory is based on a study of the homological and homotopical properties of Banach rings and modules and the resulting theory is compatible with the classical constructions of rigid and adic geometry. If time permits some applications will be described.

## 15 :50–16 :30

### The quadratic Manin-Peyre conjecture for del Pezzo surfaces

***Kevin Destagnol***

Paris-Saclay University, Orsay, France

I will present a general framework to study the distribution of rational points of bounded height on $\mathrm{Sym}^2 X := (X \times X)/\mathfrak{S}_2$ with $X$ a del Pezzo surface (where the action of the symmetric group is just by permuting the two copies of $X$) and explain how this framework can be used to provide asymptotics in the case of the infinite family of non-split quadric surfaces given by $x^2 - dy^2 = zw \subseteq \mathbb{P}^3_{\mathbb{Q}}$. This is joint work with F. Balestrieri, J. Lyczak, J. Park and N. Rome.

# Wednesday, 22 of January 2025

## 9 :30–10 :30

### Coefficients of modular polynomials

***Florian Breuer***

University of Newcastle, Australia

For every positive integer $N$, the modular polynomial $\Phi_N(X, Y)$ has integer coefficients and vanishes precisely at pairs of $j$-invariants of elliptic curves linked by a cyclic isogeny of order $N$. These polynomials have applications in cryptography and define integral (but singular) models for the modular curves $X_0(N)$. Their coefficients grow rapidly with $N$. In this talk, I will explain recent joint work with Fabien Pazuki and Desirée Gijón Gómez obtaining explicit upper and lower bounds on the size of these coefficients. Our methods also lead to explicit bounds on the heights of Hecke images. If time allows, I can also outline analogous results for Drinfeld modular polynomials.

## 11 :00–12 :00

### A parallelogram inequality for abelian varieties over function fields

***Richard Griffon***

Universite Clermont Auvergne, France

Given an abelian variety $A$ over a number field, and two finite subgroups $G$,$H$ of $A$, Rémond has recently proved an inequality relating the Faltings heights of the quotients of $A$ by $G$, $H$, $G \cap H$, and $G + H$. I will talk about a very recent work — joint with Samuel Le Fourn and Fabien Pazuki — in which we prove a perfect analogue of Rémond's inequality in the context of abelian varieties over function fields, where the role of Faltings height is played by the differential height. I will sketch our proof which, among other tools, requires controlling the variation of the differential height through isogenies of various types. Time permitting, I will discuss an application of this inequality to a bound on the height of abelian subvarieties of a given abelian variety over a function field.

## 12 :00–12 :40

## The Asymptotic Analysis of Norms in Integer Partitions

***Dennis Kinoti Gikunda***

Stellenbosch University, South Africa

A partition of a positive integer $n$ is a way of expressing $n$ as a sum of positive integers. In this work, we will focus on a specific parameter of partitions known as the “norm", which is defined as the product of the parts in the partition. We show that the logarithm of the norm of a random partition of $n$ has a continuous limiting distribution when $n$ is sufficiently large. We generalise this result to the case of $\Lambda$-partitions where $\Lambda$ is a sequence of positive integers satisfying certain conditions (referred to as the Meinardus scheme). Important examples include square partitions, prime partitions, and Mahler partitions.

Our method is based on analytic techniques such as the saddle-point method and the Mellin transform method. We will conclude by discussing potential future research directions. This work is joint with Dimbinaina Ralaivaosaona.

# Thursday, 23 of January 2025

## 9 :30–10 :30

### On the distribution of sequences of the form $(q_n y)$

***Simon Kristensen***

Aarhus University, Denmark

The distibution is of sequences of the form $(q_n y)$ with $(q_n)$ a sequence of integers and $y$ a real number has attracted quite a bit of attention, for instance due to the relation to inhomogeneous Littlewood type problems. In this talk, we will provide some results on the Lebesgue measure and Hausdorff dimension of the set of points in the unit interval approximated to a certain rate by points from such a sequence. A feature of our approace is that we obtain estimates even in the case when the sequence $(q_n)$ grows rather slowly. Nonetheless, our results leave intriguing open problems for further study. This is in part joint work with Tomas Persson.

## 11 :00–11 :40

### Families of Varieties

***Bruno Chiarellotto***

Universita degli Studi di Padova, Italy

Starting with classical results about families of complex varieties and their degeneration we will deal with some arithmetic analogous. We will present some recent results on degeneration of curves and surfaces.

## 11 :40–12 :20

### Alignments in Ulam's Spiral

***Stephane Vinatier***

University of Limoges, France

In joint work with Sophie Marques, we investigate which polynomials with integer coefficients yield alignments when representing their values at integers in Ulam's spiral. This well-known figure, in which alignments of prime numbers are produced by certain degree $2$ polynomials with many prime values at integers, such as Euler's formula, can be seen as a parametrization of $\mathbb{Z}^2$ by positive integers. We make this parametrization explicit. We also explain the spirals drawn by the values of certain polynomials inside Ulam's spiral, study symmetry properties, and display surprising figures produced by polynomials with non-aligned values.

## 14 :00–14 :40

### The multiplicative structure of the set of integers modulo a power of a prime.

***Joseph Atalaye***

Stellenbosch University, South Africa

Computing the automorphism group of integers modulo a power of a prime is a classic exercise in any introductory abstract algebra course. If we focus solely on the multiplicative structure and disregard addition, the set of integers forms what is known as a monoid. This raises a natural question : What is the structure of the automorphisms of this monoid ? In this talk, we will explore how to answer this question and discuss the insights gained from this analysis. Joint work with Liam Baker and Sophie Marques.

## 14 :40–15 :20

### Some properties of overpartitions into nonmultiples of two integers.

***Abdulaziz Mohammed Alanazi***

Tabuk University, Saudi Arabia

We consider properties of overpartitions that are simultaneously $\ell$-regular and $\mu$-regular, where $\ell$ and $\mu$ are positive relatively prime integers. We prove a seven-way combinatorial identity related to these overpartitions. We also prove several congruence properties satisfied by this class of partitions (and a further related class) using both generating functions and modular forms with Radu's Algorithm.

## 15 :40–16 :20

### Factorials which are ratios of products of Fibonacci numbers

***Florian Luca***

Stellenbosch University, South Africa

In my talk, I will look at the factorials which are ratios of products of Fibonacci numbers. I will show that the largest such is

$$36! = F_4 F_5^6 F_6 F_7 F_8^4 F_9 F_{10}^2 F_{12}^5 F_{14} F_{15}^{-1} F_{18} F_{24} F_{30}.$$

The proof uses ingredients from the structure of *Fibonaci integers* a concept studied in a **2011** *J. Number Theory* paper of the speaker with Carl Pomerance and Stephan Wagner, which are integers which belong to the multiplicative group generated by the Fibonacci numbers.

# Friday, 24 of January 2025

## 9 :30–10 :30

### Refining Overlined Parts in Overpartitions via Residue Classes

*Augustine Munagi*

University of the Witswatersrand, South Africa

Over the past several years, numerous authors have studied properties of the combinatorial objects known as overpartitions

(which are natural generalizations of integer partitions). In this talk, we consider various classes of overpartitions where the

"overlined parts" belong to certain residue classes modulo a positive integer $m$. We state new identities between such restricted overpartitions

and standard partition functions. Finally, we prove a number of Ramanujan-like congruences for the restricted overpartitions using generating function manipulations.

This is joint work with James Sellers.

## 10 :30–11 :10

### Wieferich primes and Drinfeld modules

*Alexis Lucas*

Universite de Caen Normandie, France

Let $\phi$ be a Drinfeld module and $\mathfrak{p}$ a monic irreducible polynomial of $\mathbb{F}_q[\theta]$ . On the one hand we introduce the $\mathfrak{p}$-adic $L$-series associated to $\phi$ and on the other we introduce the poropety for $\mathfrak{p}$ to be Wieferich in basis $\phi$. We establish a strong connexion between these two notions with the help of the Taelman's class formula. We will completely investigate what we call the « small » case, including in particular the Carlitz module and extending the work of Thakur. This is a joint work with Xavier Caruso and Quentin Gazda.

## 11 :30–12 :10

## The exponential local-global principle and power residue symbols

***Henry (Maya) Thackeray***

University of Pretoria, South Africa

The exponential local-global principle, also known as the Skolem conjecture, is the following statement (Bilu et al. 2022) :

Let $s$ be a positive integer. Assume that some sequence

$$t = (\ldots, t(-2), t(-1), t(0), t(1), t(2), \ldots)$$

of numbers in $\mathbb{Z}[1/s]$ satisfies a linear recurrence

$$t(n) = a(1)t(n-1) + a(2)t(n-2) + \cdots + a(d)t(n-d)$$

such that all roots of $x^d + a(1)x^{d-1} + a(2)x^{d-2} + \cdots + a(d-1)x + a(d)$ are simple and nonzero. Assume that for every positive integer $m$ that is relatively prime to $s$, some $t(k)$ is $m$ times a number in $\mathbb{Z}[1/s]$. It follows that some $t(k)$ is zero.

The conjecture has been proved in some cases, but is open in general. This talk presents a proof of some cases of the exponential local-global principle (with order $d$ at most 3) using power residue symbols.

**References**

Bilu, Y., et al. 2022. Skolem meets Schanuel, 47th International Symposium on Mathematical Foundations of Computer Science, article number 62, pp. 62 :1–62 :15.

## 12 :10–12 :50

## Partitions with parity restrictions on parts

***Darlison Nyirenda***

University of the Witswatersrand, South Africa

J. Sellers and F. Zanello proved some congruence results for the number of partitions of n wherein parts have odd multiplicities. Motivated by their work, we study various partition functions associated with partitions with parity restrictions on parts. In this talk, we present some observations in this direction.

| | |
|---|---|
| Abdulaziz Mohammed Alanazi | Tabuk University, Saudi Arabia |
| Joseph Atalaye | Stellenbosch University, South Africa |
| Liam Baker | Stellenbosch University, South Africa |
| Bruce Bartlett | Stellenbosch University, South Africa |
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| Lajos Hajdu | University of Debreceni, Hungary |
| Simon Kristensen | Aarhus University, Denmark |
| Alexis Lucas | Universite de Caen Normandie, France |

**List of Participants (continued)**

| | |
|---|---|
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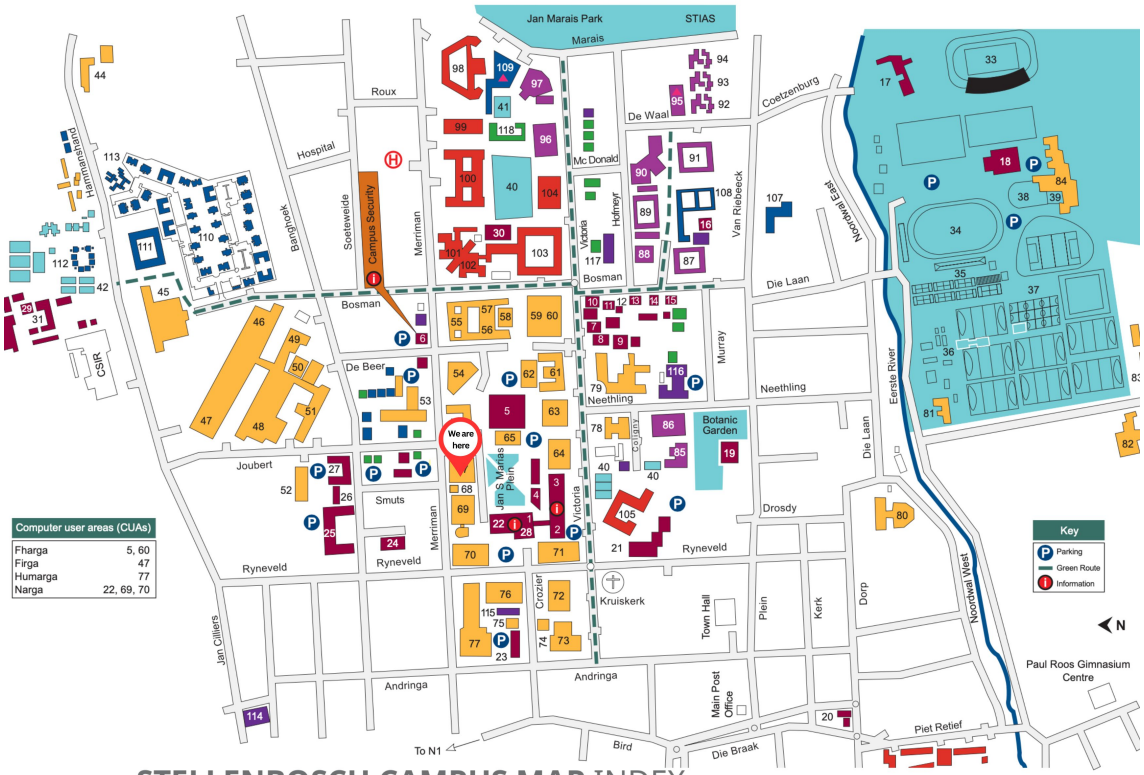
| Darlison Nyirenda | University of the Witswatersrand, South Africa |
| Fabian Palmer | University of KwaZulu-Natal, South Africa |
| Istvan Pink | University of Debreceni, Hungary |
| Kerry Porrill | Stellenbosch University, South Africa |
| Laszlo Szalay | University of Sopron, Hungary |
| Maya Thackeray | University of Pretoria, South Africa |
| Matteo Verzobio | IST Austria |
| Stephane Vinatier | University of Limoges, France |

# STELLENBOSCH CAMPUS MAP

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# Sponsors

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