

NOBEL SYMPOSIA

Predictability in Science in the Age of AI **STIAS, 24 - 28 October 2022**

DRAFT PROGRAMME (version of 19 August 2022)

The Nobel Symposium in Physics NS183 on “Predictability in Science in the Age of AI” is funded by the Knut and Alice Wallenberg Foundation and organized by the Stellenbosch Institute for Advanced Study (STIAS) in South Africa. The NOBEL SYMPOSIA mark is owned by the Nobel Foundation.

Monday, October 24

Session 1. Opening. Chair Hendrik Geyer

9:00 - 9:15 Welcome STIAS (Edward Kirumira – STIAS Director)

9:15 - 9:30 Introducing the Physics Nobel Symposium (Erik Aurell)

Session 2. What is the programme about? Chair Luca Gammaitoni

9:30 – 10:30 Angelo Vulpiani; *What is predictability?*

10.30-11.00 Coffee

11.00-12.00 Maria Schuld; *TBA*

12:00-13:00 Winston Soboyejo (Wole); *TBA*

13.00-14.00 Lunch

Session 3. Cosmology and Dynamical Systems (part I) Chair Yinzhe Ma

14.00-15.00 Vyacheslav Mukhanov; *TBA*

15.00-16.00 Neil Turok; *TBA*

16.00-16:30 Coffee and depart for Stellenbosch University campus

Outreach event: Stellenbosch University

Venue: Jan Mouton Centre, SU Campus. Chair: TBC

16:30-16:45 Welcome and introduction

16.45-18.00 Michael Berry; *TBA*

18.00-20.00 Stellenbosch University hosted Cocktail Reception

Tuesday, October 25

Launch of the Nobel in Africa Symposia Series.

8:00 – 9:00 Arrival of symposium participants and invited guests, light breakfast served

9:00 - 9:15 Welcome STIAS and SU (Edward Kirumira – STIAS Director; Wim de Villiers – Stellenbosch University Rector)

9:15 - 10:30 Opening messages from representatives of:

- Wallenberg Foundations – Peter Wallenberg Jr
- Minister/Director General, South African Department of Higher Education & Training – TBC
- Universities South Africa – TBC

10:30-11:00 Coffee

11:00-11:15 Vidar Helgesen (CEO Nobel Foundation)

11:15-11:45 Mats Larsson; *The Nobel Prizes in 1932/33: Heisenberg, Schrödinger and Dirac*

11:45-12:30 Brief presentations on the themes of the first four symposia:

- Physics: Predictability in Science in the Age of AI, Erik Aurell & Francesco Petruccione
- Chemistry: Tuberculosis and Antibiotic Resistance – From Basic Drug Discovery to Clinic, Fredrik Almqvist & tbc
- Economic Sciences: Microdevelopment research in the last 20 years: what have we learned? Jakob Svensson & Rulof Burger
- Physiology or Medicine: Progress and Challenges in Cardiovascular Medicine, Göran Hansson & tbc

12:30-14:00 Lunch

Symposium sessions continue:

Session 3. Cosmology and Dynamical Systems (part II) Chair Angelo Vulpiani

14.00-15.00 James Crutchfield; *TBA*

15:00-16:00 Massimo Cencini; *TBC*

16.00-16.30 Coffee

16.30-18.00 Panel discussion.

Panelists: speakers and chairs of the first two days.

Moderator: Magnus Boman

Nobel in Africa - Dinner reception at Nooitgedacht Estate

18.00-21.00 Dinner programme & entertainment

Wednesday, October 26

Session 4. Complexity, spin glasses and AI Chair Hai-Jun Zhou

09.00-10.00 Matteo Marsili; *TBC*

10.00-10.30 Coffee

10.30-11.30 Federico Ricci-Tersenghi; *TBC*

11.30-12.30 Scott Kirkpatrick; *TBA*

12.30-14.00 Lunch

Session 5. Epidemiology and pandemiology I Co-Chairs Erik Aurell and Erling Norrby

14.00-15.00 Nuria Oliver; *TBA*

15.00-16.00 Christian Happi; *TBA*

16.00-16.30 Coffee

Session 6. Epidemiology and pandemiology II Co-Chairs Erik Aurell and Erling Norrby

16.30-17.30 Florian Burckhardt; *TBA*

17.30-18.30 Tulio de Oliveira; *TBA*

18.30-19.00 Unstructured discussion time

19.00 Dinner

Thursday, October 27

Session 7. Quantitative Biology / Biological Physics I Chair Francesco Petruccione

09.00-10.00 Massimo Vergassola; *TBA*

10.00-10.30 Coffee

10.30-11.30 Mogens Høgh Jensen; *TBC*

11.30-12.30 Aleksandra Walczak; *TBA*

12.30-14.00 Lunch

Session 8. Quantitative Biology / Biological Physics II Chair Ingemar Ernberg

14.00-15.00 Armita Nourmohammad; *TBA*

15.00-15.30 Coffee

15.30-16.30 Irene Giardina; *TBA*

16.30-17.30 Leihan Tang; *TBA*

17.30-19.00 Unstructured discussion time

19.00-21.00 Dinner

Friday, October 28

Session 9 AI Chair Petri Myllymäki

09.00-10.00 Max Welling; *TBA*

10.00-10.30 Coffee

10.30-11.30 Arne Elofsson; *TBA*

11.30-12.30 Yoshiyuki Kabashima; *TBA*

12.30-14.00 Lunch

Session 10. Quantum and AI Chair Chair Magnus Boman

14.00-15.00 Kae Nemoto; *TBA*

15.00-15.30 Coffee

15.30-17.00 Panel discussion.

Panelists: speakers of all days.

Moderator: Erik Aurell

17.00-19.00 Farewell cocktail

Prof. Edward K. Kirumira, STIAS Director

Prof. Hendrik Geyer, STIAS

Prof. Angelo Vulpiani, Chairman of the International Organizing Committee

Prof. Erik Aurell, convener

Prof. Francesco Petruccione

19.00-21.00 Closing Dinner