



NITheP/NITheCS Colloquium

"A strategy for finding people infected with COVID-19: optimising the efficiency of pooled testing"

Wilfred Ndifon ([AIMS](#))

&

Neil Turok ([AIMS](#) and [Perimeter](#))

Monday, 4 May 2020, 16:00 (GMT+2)

Abstract:

Suppressing COVID-19 will likely require us to rapidly identify and isolate infected individuals, on an ongoing basis. However, RT-PCR tests are costly, making regular testing of every individual extremely expensive. In this talk, we present a way to reduce the cost by collecting samples from everyone, then subdividing and combining them in various combinations, prior to testing. We propose an algorithm based on the geometry of a hypercube, which improves on traditional "group testing" (Dorfman 1943) approaches. It enables extremely efficient identification of infected individuals when the prevalence of the virus is low. For example, finding an infected individual in a population of 10,000 could take fewer than 20 tests. We shall describe field trials of this approach, now underway in Rwanda.

Short Biographies:

[Wilfred Ndifon](#) was born in Cameroon and took his PhD at Princeton. He is a Professor of Theoretical Biology at AIMS, where his research group uses mathematical modeling to discover mechanistic insights about biology. Of relevance to this pandemic, he has shown theoretically (with Dushoff) how internal capacity constraints decrease human immune competence beyond ~60 y, a deadly age range for COVID-19, and how to prevent this outcome.

[Neil Turok](#) was born in South Africa. He founded the African Institute for Mathematical Sciences (AIMS) in 2003. Neil's research focuses on testing and developing theories of the universe. Formerly a Professor of Physics at Princeton and Cambridge, he currently serves as director of the Centre for the Universe at the Perimeter Institute in Canada. From July 2020, he will take up the Higgs Chair for Theoretical Physics at the University of Edinburgh.

Zoom details:

You are invited to a Zoom webinar.

When: May 4, 2020, 04:00 PM Johannesburg

Topic: NITheP/NITheCs Colloquium: Neil Turok & Wilfred Ndifon

Register in advance for this webinar:

https://ukzn.zoom.us/webinar/register/WN_gNzH0U3cRCWA9Wnlh_Dusg

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