

Tangent Categories

Dr Marcello Lanfranchi (Macquarie University, Australia)

DATES: Thurs, 12 March 2026 | 14h00 – 16h00 SAST

VENUE:

- Online
- Room 1006, Mathematical Sciences/Industrial Psychology Building, Merriman Street, Stellenbosch

ABSTRACT

When I first studied differential geometry during my master's degree, I was left with the impression that a geometric theory requires a long list of assumptions and structures, such as paracompactness, second-countability, and differential atlases. For this reason, when I first encountered the definition of a tangent category, I found it hard to believe that it could genuinely capture the fundamental structures of differential geometry. However, after reading more on the subject, I began to reconsider. Could tangent categories provide a legitimate categorical framework for differential geometry? And if so, what other kinds of geometry might they be able to capture?

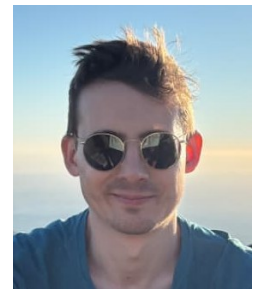
In this mini-course, I will share some of the ideas I have learned about tangent categories and hopefully convince you that my initial impression was mistaken.

No background in differential geometry or algebraic geometry is required to attend this mini-course. My goal is to show that we can talk about geometry directly, using the language of tangent categories.

BIOGRAPHY

Dr Marcello Lanfranchi's background is in theoretical physics. After completing his Master's degree, he spent two years outside academia before encountering the concept of tangent categories. This motivated his return to research. He went on to complete his PhD at Dalhousie University in Halifax, Nova Scotia (Canada), under the supervision of Geoff Cruttwell and Dorette Pronk.

In February 2025, he began a postdoctoral position at Macquarie University, where he works with J.S. Lemay and Richard Garner on differential and tangent categories.



TEAMS LINK: <https://bit.ly/4dbRkCL>

