

NITheCS COLLOQUIUM: Wetting and Nonwetting of Fluids

Prof Joseph Indekeu (KU Leuven, Belgium)

Monday, 24 July 2023 | 16h00 – 17h00 SAST

Venue: in person* and online

* Neelsie Cinema, Stellenbosch University

--- Cheese and wine will be served at the venue ---

ABSTRACT

For matter in bulk the equilibrium state is that which minimizes the (free) energy. When phases of matter meet at an interface, a similar principle applies. The equilibrium configuration is that which minimizes the interfacial tension. For three coexisting phases there are two options. Option one is a 'nonwet' state in which all three phases, and their mutual interfaces, meet at a common line of contact. Option two is a 'wet' state, in which one of the phases intrudes between the other two, thus preventing direct contact between the latter. Fascinating phase transitions and critical phenomena are associated with the changeover from nonwet to wet. The role of a 'nearby' bulk critical point in this changeover has been the subject of controversy since more than 3 decades. We shed new light on this role for three fluid phases in the vicinity of a bulk tricritical point.

Details: [J.O. Indekeu and K. Koga, Phys. Rev. Lett. 129, 224501 \(2022\)](#).

BIOGRAPHY

Joseph Indekeu is professor of theoretical physics at KU Leuven, Belgium. His expertise is in statistical physics and theoretical condensed matter physics. His research is mainly on statistical mechanics of phase transitions and critical phenomena at surfaces and interfaces. Most of his contributions are in the area of wetting phenomena. He is Editor-in-Chief of the journal *Physica A*. His teaching assignments are in general physics, quantum mechanics and statistical physics. He is now visiting Stellenbosch University (SU) for the fourth time and will be Stias Fellow in 2024. With Kristian Müller-Nedebock (SU), he studied analytic methods for solving nonlinear differential equations. He has an outreach gig that introduces [quantum physics](#) to a general audience. It is subtitled in 9 languages, including Afrikaans.



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