

SEMINARIO MAPHYAG

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**Drinfeld doubles and Gaussian
calculus for universal knot invariants**

Martes 16 de enero - 12:00

Aula 225 y online

Can we construct knot invariants from algebras? In the first half of the talk, I will explain how the Drinfeld double, a purely algebraic construction for (Hopf) algebras, has a very natural knot-theoretical interpretation in terms of the so-called universal invariant. This invariant, which is subject to the choice of an algebra, dominates a family of quantum invariants defined by Reshetikhin and Turaev in the late 1980s using the representation theory of the algebra. The downside of the universal invariant is that, when the algebra is infinite-dimensional, it is in general very hard to compute for a given arbitrary knot. In the second half of the talk, following work by Bar-Natan and van der Veen, I will present an algebra \mathbf{D} arising from the Drinfeld double construction and a toolbox called Gaussian calculus that allow to compute the invariant efficiently for any knot. If time allows, I will also explain how this invariant seems to be closely related to what is known as the "rational expansion of the coloured Jones polynomials".

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