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# Seminar des SFB/TRR 326 GAUS

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Freitag, 21.06.2024

**Prof. Dr. Stefano Morra**

Université Paris 8, St. Denis

spricht über das Thema

## **A local model for potentially Barsotti–Tate Galois representations**

Potentially Barsotti–Tate deformations are an essential tool to achieve arithmetic results as the proof of the Shimura–Taniyama–Weyl conjecture, or the Breuil–Mézard conjecture. Nevertheless, their geometry is still poorly understood, as such rings showed a rich range of complicated behavior, e.g. they may fail to be normal or regular (as shown in some examples and conjectures by Caruso–David–Mézard). In this talk we will discuss how moduli stack of Breuil–Kisin modules can be used to describe the geometry of moduli of tamely potentially Barsotti–Tate Galois representations (in rank 2 and over an unramified extension of  $Q_p$ ), using the theory of local models of loop groups in mixed characteristic. The main technical tool is an analysis of the  $p$ -torsion of a tangent complex to lift affine open charts for scheme-theoretic images between moduli of Breuil–Kisin modules and moduli of Galois representations. As a byproduct, we obtain an algorithmic procedure to compute explicit presentations for any tamely potentially Barsotti–Tate deformation ring for 2-dimensional Galois representations of unramified extensions of  $Q_p$ .

This is joint work with B. Le Hung and A. Mézard.

Ort: **INF 205, SR A**

Beginn: **13:30 Uhr**

Alle Interessenten sind herzlich eingeladen.

Prof Dr. Otmar Venjakob