



Berlin
Mathematical
School

BMS Kovalevskaya Colloquium

Friday 14 December 2018 at 14:15

Tea & Cookies starting at 13:00

BMS Loft, Urania, An der Urania 17, 10787 Berlin

Sylvie Paycha

(U Potsdam)

Are locality and renormalisation reconcilable?

According to the principle of locality in physics, events taking place at different locations should behave independently, a feature expected to be reflected in the measurements. The latter are confronted with theoretic predictions which use renormalisation techniques in order to deal with divergences from which one wants to derive finite quantities. The purpose of this talk is to confront locality and renormalisation.

Sophisticated (co)algebraic methods developed by physicists make it possible to keep track of locality while renormalising. They mostly use a univariate regularisation scheme such as dimensional regularisation. In her talk, Paycha shall present an alternative multivariate approach to renormalisation that encodes locality as an underlying algebraic principle. It can be applied to various situations involving renormalisation, such as divergent multizeta functions and their generalisations, namely discrete sums on cones and discrete sums associated with trees. This talk is based on joint work with Pierre Clavier, Li Guo and Bin Zhang.

Sylvie Paycha is a French mathematician and mathematical physicist. Her work centers on regularisation and renormalisation methods in geometry, combinatorics and number theory. Paycha gained her PhD at U Bochum (1988) and did her habilitation at U Louis Pasteur, Strasbourg (1994). She has held positions at Ruhr University Bochum (1985-1989), U Louis Pasteur (1989-1994), and U Blaise Pascal, France (1995-2011). Paycha has chaired both European Women in Mathematics and the French Association of Women and Mathematics. She is on leave from U Clermont Auvergne in France and has been a professor for analysis at U Potsdam since 2011.

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