



## Kolloquium über Reine Mathematik

Einladung zu einem Vortrag

**Dienstag, 23. Mai 2017**

17 Uhr s.t., Geom H4

Prof. Dr. Nick Kuhn  
(University of Virginia)

### *A topologist's journeys through the world of Hopf algebras*

Abstract:

I will describe a journey that I have been making recently through the world of graded connected Hopf algebras.

The journey starts with the ring quasi-symmetric functions,  $QSymm$ , an analogue of the ring of symmetric functions. This ring appears as the cohomology ring of a space familiar to algebraic topologists, and is manifestly a graded Hopf algebra. In 2008, Andy Baker and Birgit Richter used classic work on Hopf algebras by Milnor and Moore, together with well-known topological decomposition results, to give a very elementary proof of Hazewinkel's theorem that  $QSymm$  is a polynomial algebra.

This one example can be set into a more general framework, leading to a variety of questions of both algebraic and topological interest. Pondering these has led me to a classification of what I term free split Hopf algebras in characteristic  $p$ , using work of Goerss, Lannes, and Morel on non-commutative Witt vectors.

**Vor dem Vortrag (ab 16.30 Uhr) stehen im Raum 327 Kaffee und Tee bereit.**