

# Algebra Seminar

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**Wednesday, September 28, 2016**  
**HH-3017, 1:00p.m.**

## **On the Hochschild Cocomplex of a Factorizable Hopf Algebra I**

### **Abstract:**

The modular group acts on the center of a finite-dimensional factorizable Hopf algebra, which is the zeroth Hochschild cohomology of this algebra. The question discussed in the talk is whether it is possible to extend this action to an action on the whole Hochschild cocomplex.

In the talk, we will first recall the definition of a factorizable Hopf algebra. Then we will present the well-known action of the modular group on the center of a finite-dimensional factorizable Hopf algebra. For this purpose, we will introduce the Drinfeld map and the Radford map.

After that, we will discuss the definition of the Hochschild complex and cocomplex and generalize the Drinfeld map, the Radford map, and the antipode to isomorphisms of cocomplexes. We will explain how these maps might be used to define an action of the modular group on the Hochschild cocomplex, although the defining relations still remain to be established. The talk is based on my master's thesis, written at the University of Hamburg under the supervision of Christoph Schweigert and Simon Lentner.