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*Semilinear Actions of General Linear Groups on Character Rings of Hopf Algebras*

It has been shown by Y. Zhu and the speaker that the action of the modular group  $SL(2, \mathbb{Z})$  on the character ring of a semisimple factorizable Hopf algebra factors over the reduced modular group  $SL(2, \mathbb{Z}_N)$  of  $2 \times 2$ -matrices with entries in the finite ring  $\mathbb{Z}_N$  of integers modulo  $N$ , where  $N$  is the exponent of the Hopf algebra, under the assumption that the base field has characteristic zero and that the value of an integral on the inverse Drinfel'd element differs from its value on the Drinfel'd element itself by at most a sign.

Here, the reduced modular group acts via linear maps. However, as we explain in the talk, this action can be extended to an action of the general linear group  $GL(2, \mathbb{Z}_N)$  if one does not only consider linear maps, but also semilinear maps, where 'semilinear' means that the scalars are modified by the action of the Galois group  $\text{Gal}(\mathbb{Q}_N/\mathbb{Q})$  of the cyclotomic field. This action of the general linear group also provides a better understanding of a certain Galois condition satisfied by the Drinfel'd element. The talk is based on a recent article (Adv. Math. 236 (2013), 158-223) written jointly with Y. Zhu. We present the results using modular data.