

# Oberseminar

## ZUR

# Algebra und Algebraischen Kombinatorik

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" $U_n(q)$  acting on 2-flags and super characters"

Let  $q$  be a power of  $p$  and  $F$  be a field such that the characteristic of  $F$  is non equal to  $p$ . For each  $\lambda = (\lambda_1, \dots, \lambda_k)$  being a partition of  $n$ , the permutation module for the finite general linear group  $G = GL_n(q)$  is defined, namely  $M_F(\lambda)$ , which has a basis consisting of so called  $k$ -flags. Let  $U = U_n(q) \leq G$  be the subgroup of (lower) unitriangular matrices in  $G$ . Using Mackey decomposition, we split the restriction  $\text{Res}_U^G(M_F(\lambda))$  into  $U$ -submodules, called batches, which are labelled by row standard  $\lambda$ -tableaux  $s$ . We constructed a monomial basis of the action of  $U^w \cap U$  on the  $s$ -batch, where  $w$  is the unique element of the symmetric group  $S_n$  with  $t^\lambda w = s$ . It turned out that the resulting  $U^w \cap U$ -orbit modules arising from the monomial basis are irreducible and the action of  $U^w \cap U$  on these modules extends to an action of  $U$  yielding irreducible  $U$ -modules. We obtain a complete classification of the irreducible  $U$ -characters arising in this way, which is indeed an obvious consequence of our main result in which we determine the Yan's supercharacters of which our  $U$ -characters are irreducible constituents.

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ab 14:15 Uhr, Raum a410

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Alle Interessierten sind herzlich eingeladen.

gez. Prof. Dr. C. Bessenrodt

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