F. Ladisch. *Character Correspondences Connected with Fully Ramified Sections.*

Let G be a finite group and $L, K \lhd G$ normal subgroups. Let $\varphi \in \mathrm{Irr}(L)$ be invariant in G and fully ramified in K, that is, $\mathrm{Irr}(K \mid \varphi) = \{\theta\}$. Let $H \subseteq G$ be a subgroup with $HK = G$ and $H \cap K = L$. Under additional conditions, there is a degree proportional character correspondence between $\mathrm{Irr}(G \mid \theta)$ and $\mathrm{Irr}(H \mid \varphi)$.

Using ring theoretic methods, one can give surprisingly elementary proofs of some of the results below. Let e_φ be the central primitive idempotent associated with φ and set $S = \mathbf{C}_{\mathbb{C}Ke_\varphi}(L)$. Then S is a $n \times n$ matrix ring over $\mathbb{C}$, where $n^2 = |K/L|$, and H/L acts on S. Every representation $\sigma : H/L \to S$ inducing the action of H/L on S defines an isomorphism $\mathbb{C}Ge_\varphi \simeq \mathbf{M}_n(\mathbb{C}He_\varphi)$. If $\chi \in \mathrm{Irr}(G \mid \theta)$ and $\xi \in \mathrm{Irr}(H \mid \varphi)$ correspond under the resulting bijection, then $\chi_H = \psi\xi$ and $\xi^G = \bar{\psi}\chi$, where ψ is the character of σ.

Such a magic representation exists in the following cases:

1. $|G/K|$ and $|K/L|$ are coprime (trivial proof). The unique magic character of determinant 1 is even rational and nonzero everywhere, and if $|G/L|$ is odd, $\psi - 1 = 2\beta$ for some character β of H/L. (cf. Lewis, Nonabelian fully ramified sections, Canad. J. Math. 48 (1996), no. 5, 997-1017 and Character correspondences and nilpotent fully-ramified sections, Commun. Algebra 25 (1997), no. 11, 3587-3604)

2. There is $M \lhd H$ with $(|M/L|, |K/L|) = 1$ and $\mathbf{C}_{K/L}(M) = 1$. (cf. Everett C. Dade, Characters of groups with normal extra special subgroups, Math. Z. 152 (1976), 1-31 and I. M. Isaacs, Character correspondences in solvable groups, Advances in Math. 43 (1982), 284-306)

3. K/L is abelian of odd order. Here ψ was investigated by Isaacs (Characters of solvable and symplectic groups, Amer. J. Math. 95 (1973), 594-635). Our approach significantly simplifies the proof of the existence of a canonical character correspondence. We can also easily derive some values of ψ.

Now assume that in the last situation φ is only semi-invariant in G, that is, every G-conjugate of φ is Galois conjugate to φ (over the rationals). Let f be the central primitive idempotent of $\mathbb{Q}L$ with $\varphi(f) \neq 0$ We show that $\mathbb{Q}Gf \simeq \mathbf{M}_n(\mathbb{Q}Hf)$, provided that there is $M \subseteq G$ which induces a coprime and fixed point free action on K/L. As a consequence, the Isaacs part of the Glauberman-Isaacs correspondence preserves Schur indices.