

Elementary abelian subgroup induction and some applications to cohomology of infinite groups

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Elementary abelian subgroup induction plays a crucial role in cohomology and representation theory of finite groups. Roughly speaking, the results say that important cohomological properties hold for a group ring $R\Gamma$, Γ finite and R an arbitrary ring (with 1), if and only if they hold for RE where E runs over all elementary abelian subgroups of Γ (for instance a theorem of Chouinard says that a module M over a modular group algebra $k\Gamma$ is projective if and only if M is projective over kE where E runs over all elementary abelian subgroups of Γ). In general, similar statements are false if one replaces the family of elementary abelian subgroups by cyclics. Using crossed products and profinite completions we apply this theory to cohomology of infinite groups.