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Hartley´s Theorem on Representations of the General Linear Groups and Classical Groups

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Abstract: We suggest a new proof of Hartley's theorem on representations of the general linear groups $GL_n(K)$ where K is a field. Let H be a subgroup of $GL_n(K)$ and E the natural $GL_n(K)$-module. Suppose that the restriction $E|_H$ of E to H contains a regular KH-module. The theorem asserts that this is then true for an arbitrary $GL_n(K)$-module M provided dim M>1 and H is not of exponent 2. Our proof is based on the general facts of representation theory of algebraic groups. In addition, we provide partial generalizations of Hartley's theorem to other classical groups.

Key Words: subgroups of classical groups, representation theory of algebraic groups

Keywords
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