

**INNER PLETHYSM IN THE REPRESENTATION
RING OF THE GENERAL LINEAR GROUP***

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The investigation of plethysms (inner and outer) in the representation theory of finite classical groups has been one of the important outstanding problems in the representation theory of the symmetric group [5], [7] and [8]. The fundamental theorem of the representation theory of the symmetric group has been more or less known since the origins of the subject with Frobenius at the turn of the century. This theorem states there is an isomorphism between the representation ring of the symmetric groups S_n and the ring of symmetric polynomials in an infinite number of variables. But for various reasons this isomorphism in its pure form seems not to have appeared until Atiyah [2] introduced the Steenrod power operations in K -Theory around 1966. In [2] Atiyah described how to use the complex representations of the symmetric group S_k , to

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