

**INSTITUT SAINS MATEMATIK  
UNIVERSITI MALAYA  
SIRI KOLOKIUUM**

**Tajuk:** Rank preservers on spaces of matrices with zero trace \*  
**Penceramah:** Lim Ming Huat (*University of Malaya*)  
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**Tempat:** MM3, INSTITUT SAINS MATEMATIK  
**Masa:** 2:00 pm – 3:00 pm

**Abstract**

Let  $F$  be a field. Let  $M_n(F)$  be the algebra of  $n \times n$  matrices over  $F$  and  $sl_n(F)$  denote its subspace consisting of all matrices with zero trace. In this talk, we first discuss the results of W.J.Wong and of W.Watkins concerning linear mappings from  $sl_n(F)$  to  $M_n(F)$  that send rank one matrices to rank one matrices for  $n \geq 4$  and show that their results hold true for  $n = 3$ . We next discuss (i) an extension of a result of Watkins concerning bilinear mappings on  $M_n(F)$  preserving certain rank conditions; and (ii) characterizations of linear mappings on  $sl_n(F)$  which preserve rank  $k$  matrices or nonzero matrices of rank not exceeding  $k$  where  $k$  is a certain positive integer. Some results on additive preservers of rank one matrices from  $sl_n(F)$  to  $M_m(F)$  will also be mentioned.

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**SEMUA DIJEMPUT HADIR**