

Lexsegment ideals in polynomial rings-I.  
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**Abstract:** I will discuss about the lexsegment ideals in polynomial rings, particularly in  $K[x, y]$ . We will prove that if  $I$  is a lexsegment ideal in  $K[x, y]$ , then the Rees algebra of  $I$  is Cohen-Macaulay if and only if the associated graded ring is Cohen-Macaulay if and only if the fiber cone is Cohen-Macaulay.

**Pre-requisites :**  
Familiarity with basic commutative algebra