# Higher Secant Varieties of Classically Studied Varieties

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In many applications, the collected data can be represented as elements which have more than two indices. Such high-order equivalents of vectors are called *tensors*. Any tensor can be written as a linear combination of decomposable tensors. A tensor is said to have *rank* $r$ if it can be written as a linear combination of $r$ decomposable tensors but not fewer. An interesting question is "What is the least number $R$ such that a generic tensor has rank less than or equal to $R$?" Such an integer $R$ is called the *typical rank*.

The definition of typical rank can also be extended to symmetric tensors and alternating tensors. The problem of finding the typical ranks is closely related to the problem of finding the dimensions of the secant varieties of classically studied varieties such as Segre varieties, Veronese varieties and Grassmann varieties. The main goal of this talk is to present inductive approaches to compute the dimensions of secant varieties of such varieties.