



## Colloquium Series

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### Gröbner Bases and Buchberger's Criterion

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**Abstract:** A Gröbner basis is a set of generators that produces a polynomial ideal and simultaneously satisfies an important property of equality between two ideals. However, this definition is often difficult to check when the outcome is true so we build up to a more efficient process that is easier to apply. But first we must lay the groundwork! In this presentation, we discuss within the setting of polynomial rings and polynomial ideals, the rules of monomial orderings and polynomial long division, and how to describe the generating sets of these ideals. Our goal is to introduce Buchberger's Criterion which provides an algorithmic way to satisfy the classic definition of a Gröbner basis and speeds up the process of determining whether a generating set of a polynomial ideal is in fact a Gröbner basis.

**Keywords:** Gröbner basis, Buchberger's criterion, polynomial ideal, monomial orderings, generating sets

Wed. Sep. 22, 1:05 – 1:50 pm on Zoom

For more info visit the [department website for the colloquium](#)