

MANY CHEERFUL FACTS

presents

Algebra or: How I Learned to Stop Worrying and Love Non-Unique Factorization

a talk by George Schaeffer

13:10–14:00 on Wednesday, May 7, in Evans 1015.

*** PLEASE NOTE THE EXCEPTIONAL TIME. ***

There's no denying that \mathbb{Z} is a very nice ring. One of its nicer features is the fundamental theorem of arithmetic: The monoid $(\mathbb{Z}, \cdot)/\mathbb{Z}^\times$ is free on the set of prime numbers. Of course, as everyone knows, the analogous statement in $\mathbb{Z}[\sqrt{-5}]$ fails. The cliché example $6 = 2 \cdot 3 = (1 + \sqrt{-5})(1 - \sqrt{-5})$ is actually just the beginning of our troubles.

This talk will be a brief introduction to the exciting world of factorization theory, an active area of research with relevance to commutative algebra, combinatorics, and number theory. I promise that there will be lots of examples, abuses of Zorn's lemma, and an implication diagram that you can take home with you.

*I am the very model of a modern Major General,
I've information vegetable, animal, and mineral,
I know the kings of England, and I quote the fights historical
From Marathon to Waterloo, in order categorical;
I'm very well acquainted, too, with matters mathematical,
I understand equations, both the simple and quadratical,
About binomial theorem I'm teeming with a lot o' news,
With many cheerful facts about the square of the hypotenuse!*

— Gilbert & Sullivan, *P o P*

The website for Many Cheerful Facts is
<http://math.berkeley.edu/~mcf/>