

MANY CHEERFUL FACTS

presents

Rings with Invariant Base Number

a talk by Manny Reyes

12:10 - 1:00pm on Wednesday, September 20th, in room 1015.

Over a field k , it is well-known that if $k^m \cong k^n$ as vector spaces, then $m = n$. This result can even be extended to the case where k is an arbitrary nonzero commutative ring. However, this result fails if we replace k with an arbitrary noncommutative ring. Though some may be saddened by this news, this gives us a new ring-theoretic concept to study: a ring R is said to have invariant base number (IBN) if $R^m \cong R^n$ as right R -modules implies that $m = n$. In this talk we will give an example of a (noncommutative) ring without IBN and then proceed to study a number of conditions on rings that are sufficient to imply IBN.

*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 $P \circ P$

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