1126-13-206 **Nicholas R Baeth*** (baeth@ucmo.edu), W.C. Morris 213, UCM, Warrensburg, MO 64064.
Examples of unbounded length sets in commutative rings with zerodivisors.

When D is a commutative integral domain, the degree to which factorization in D is unique can be studied by considering length sets. For a nonzero element x in an integral domain D,

$$\mathsf{L}_d(x) = \{n \colon x = a_1 \cdots a_n \text{ with each } a_i \text{ irreducible}\}$$

is its length set. If D is a UFD, then $|\mathsf{L}_D(x)| = 1$ for all $x \in D \backslash \{0\}$, and larger length sets indicate a degree of nonunique factorization in D. This concept has been well studied, and has been extended to the study of factorization in cancellative noncommutative rings. In this talk we give examples of elements in commutative rings with zerodivisors having unbounded length sets. In particular, we will classify the sets that occur as length sets of elements in quotients of principal ideal domains and in so-called rings of single-valued matrices. (Received January 13, 2017)