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**Simone Sisneros-Thiry\*** (thiry2@illinois.edu). *Integral Quotients of Restricted Digit Sets.*

We define  $S(n; \{d_1, \dots, d_k\})$  to be the set of integers that can be represented in base  $n$  using only the digits  $\{d_1, \dots, d_k\}$ , where  $k < n$ . This talk will focus on quotients of restricted digit sets,

$$Q(n; \{d_1, \dots, d_k\}) := \{x \in \mathbb{Z} : x = s/s' \text{ for some } s, s' \in S(n; \{d_1, \dots, d_k\})\}.$$

This problem is studied using multiplication transducers (a special class of finite automata). We will discuss problems related to these integral quotients for some small bases, computational results, and conjectures. In particular, we shall describe  $m \in Q(3; \{0, 1\})$  for  $m \leq 10^6$ . (Received January 25, 2019)