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*Recursively Constructed Keyboards for Non-Standard Musical Scales.*

We will discuss recursive arrangements of black and white keys for macro/microtonal scales (like Bohlen-Pierce and the gamma scale of Wendy Carlos) which generalize the familiar layout on a standard piano keyboard. The number of notes in certain scales with roughly equal spacing (e.g., the 12 notes in an octave on a standard keyboard) is well-known to correspond with the denominator of a convergent in the continued fraction expansion of  $\log_b(a)$  where  $a$  and  $b$  are rational numbers. We take this a step further to describe a procedure for constructing keyboard layouts themselves using only the coefficients in the continued fraction. This framework is used to examine 41 equal temperament and help quantify why it is so under-used in music. The investigation was part of a URG (undergraduate research group) funded by San Jose State University. (Received September 15, 2017)