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Geremias Polanco Encarnacion* (gpolanc2@illinois.edu), Math Department, University of Illinois, 1409 W. Green St., Urbana, IL 61801. *On Minimum Excluded Type Algorithm, Golden Ratio, Beatty and Sturmian Sequences.*

Let α be an irrational number and ρ any real number. The Sturmian sequence $a_n = \lfloor \alpha n + \rho \rfloor$ for $n = 1, 2, 3, \dots$ has been greatly studied, specially after the work of Morse and Hedlund relating these types of sequences to dynamical systems. They also have application to other fields of mathematics, as well as various fields of physics, biology and computer science. In particular the case $\rho = 0$, or the Beatty sequence case, has been the theme of much research. Indeed, in this case $\frac{1}{\alpha} + \frac{1}{\beta} = 1$, if and only if the sets $A = \{\lfloor \alpha \rfloor, \lfloor 2\alpha \rfloor, \lfloor 3\alpha \rfloor, \dots\}$ and $B = \{\lfloor \beta \rfloor, \lfloor 2\beta \rfloor, \lfloor 3\beta \rfloor, \dots\}$ contain every integer n , with no n appearing in both A and B . We present here an algorithm called *minimum excluded with skipping*, and show that sturmian and other sequences can be generated by this algorithm. We also give some characterization for specific families of irrational α 's, including the Golden ratio. These families are special because of their unique continued fraction expansion or because of their algebraic nature. (Received August 11, 2011)