1035-41-1797   **Yang Wang*** (`ywang@math.msu.edu`), Department of Mathematics, Michigan State University, East Lansing, MI 48824-1027. *β-Expansion and the Golden Ratio Encoder.*

In our increasingly digital world analog signals must be converted into digital form (A/D conversion). Traditional A/D conversion quantizes voltage or current into binary bits in base 2 expansion. It is well known that base 2 expansions have certain limitations, which we will discuss. In this talk, we present a new A/D encoder based on radix expansion using the Golden ratio as the base. We discuss the advantages for practical applications and some of the associated mathematical problems such as tiling. (Received September 20, 2007)