1077-05-2543 **Krishna Dasaratha**, **Laure Flapan**, **Chansoo Lee**, **Cornelia Mihaila**, **Nicholas Neumann-Chun**, **Sarah Peluse** and **Matthew Stoffregen*** (mstoffie@gmail.com), 305 West Swissvale Avenue, Pittsburgh, PA 15218, and **Thomas Garrity**. *A Family of Multidimensional Continued Fraction Stern Sequences.* Preliminary report.

Stern's diatomic sequence $0, 1, 1, 2, 1, 3, 2, 3, 1, 4, \ldots$ (given by the recursion relation $a_{2n} = a_n$ and $a_{2n+1} = a_n + a_{n+1}$, where $a_0 = 0$ and $a_1 = 1$) is closely linked to continued fractions, and in particular to methods for subdividing the unit interval. This sequence has a number of well-known remarkable combinatorial properties. We have developed a rich family of multidimensional continued fractions, which include such previously known multidimensional continued fractions as the triangle map and the Mönkemeyer map, via various rules for subdividing a triangle. For each of these multidimensional continued fractions, we define an MCF-Stern sequence (and hence a higher dimensional generalization of the Stern diatomic sequence), from the corresponding method used for subdividing the triangle. We then explore several combinatorial results about MCF-Stern sequences, which give rise to the Fibonacci numbers and other well-known sequences. MCF Stern sequences mimic the behavior of Stern sequences, but with new complexity. In particular, we determine the sequence of maximum entries at each level of an MCF Stern sequence, and determine which triples will eventually appear in the MCF Stern Sequence. (Received September 22, 2011)