1077-11-2129 **Michael Baiocchi**, **Krishna Dasaratha**, **Laure Flapan*** (laure.flapan@yale.edu), **Thomas Garrity**, **Chansoo Lee**, **Cornelia Mihaila**, **Nicholas Neumann-Chun**, **Sarah Peluse** and **Matthew Stoffregen**. *Multidimensional Continued Fraction Pell Equations.* Preliminary report.

It is classical that there are infinitely many integer solutions x and y to Pell's equation $x^2 - dy^2 = 1$, whenever d is not a perfect square. The solutions stem from the continued fraction expansion of $\sqrt{d}$. We have recently developed a large family of generalizations of continued fractions. This family includes as special cases many well-known multidimensional continued fraction algorithms such as the Brun Algorithm, the Fully Subtractive Algorithm, the Triangle Map, the Güting Map, and the Mönkemeyer Map. For each type of multidimensional continued fraction in this family we construct a three-variable analogue to the Pell equation. We show that these Pell analogues share many of the characteristics of the original Pell equation and we provide a constructive method for using these multidimensional continued fraction Pell equations to produce units in a number field. We then extend these results to multidimensional continued fractions in higher dimensions. (Received September 21, 2011)