1077-11-2614   **Krishna Dasaratha**, **Laure Flapan**, **Thomas Garrity**, **Chansoo Lee**, **Cornelia Mihaila***
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A Generalized Family of Multidimensional Continued Fractions? Preliminary report.

Classical representations of a real number as sequence of integers include its decimal expansion and its continued fraction expansion. Periodicity of the decimal expansion means the real number is rational while periodicity of the continued fraction expansion means that the number is a quadratic irrational. In 1848, Hermite asked for a method to represent a real number as a sequence of integers so that periodicity corresponds to the degree of the number field it lies in. Attempts to solve this problem (which is still open) are called multi-dimensional continued fractions. We have developed a family of 216 multi-dimensional continued fractions, which include any number of previously known multi-dimensional continued fractions. We will discuss how this family is quite natural and how periodicity for each of these multi-dimensional continued fractions gives us information about cubic irrationals. (Received September 22, 2011)

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