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Functional Analysis of Triangle Partition Maps, a Family of Multidimensional Continued Fraction Algorithms: Transfer Operators, Zeta-Likeness, and Special Functions. Preliminary report.

The recently-developed family of triangle partition maps encompasses almost every well-known multidimensional continued fraction algorithm and contains a wealth of new ones. In direct analogue to the standard-continued-fraction Gauss-Kuzmin statistics arising from the functional analysis of the transfer operator associated with the Gauss map, we have studied the transfer operators and Gauss-Kuzmin statistics arising from triangle partition maps. We have explained why these transfer operators fall into two distinct classes, with one class giving rise to particularly nice zeta-like functions. Further, we have shown that the transfer operators associated with several triangle partition maps are nuclear of trace class zero and have also constructed Gauss-Kuzmin statistics for a handful of these maps. In our study of the functional analysis behind these transfer operators we have encountered many special functions, including the Lerch zeta, Bessel, and digamma functions, as well as Laguerre polynomials. (Received September 15, 2014)