Multidimensional continued fractions, dynamical renormalization and KAM theory. (English summary)

Summary: “The disadvantage of ‘traditional’ multidimensional continued fraction algorithms is that it is not known whether they provide simultaneous rational approximations for generic vectors. Following ideas of Dani, Lagarias and Kleinbock-Margulis we describe a simple algorithm based on the dynamics of flows on the homogeneous space \( \text{SL}(d, \mathbb{Z})/\text{SL}(d, \mathbb{R}) \) (the space of lattices of covolume one) that indeed yields best possible approximations to any irrational vector. The algorithm is ideally suited for a number of dynamical applications that involve small divisor problems. As an example, we explicitly construct a renormalization scheme for the linearization of vector fields on tori of arbitrary dimension.”

References

13. Herman, M.R.: Ingallits "a priori" pour des tores lagrangiens invariants par des


*Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.*