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A proof of Moeckel's theorem on continued fractions.

ABSTRACT.

We describe a new approach to Moeckel's theorem that for any finite index subgroup of the modular group, almost every real number has its regular continued fraction approximants equidistributed into the cusps of the subgroup according to the weighted cusp widths. The idea is to algebraically lift a nice cross-section for the geodesic flow on the modular surface to an ergodic covering flow; the lifted cross-section map is realized as a skew product transformation, from which one can read off the cusp frequencies.

This approach is sufficiently flexible to allow for an extension of Moeckel's theorem to Nakada's α -continued fractions and to Rosen's λ -continued fractions. This last part of the paper builds on the work of Arnoux and Schmidt on the Teichmüller flow for Veech surfaces. Joint work with Tom Schmidt.