About the probability structure of Brun's Algorithm in dimension two

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We describe the probability structure of the digits of Brun's Algorithm in dimension two. When viewed as doubly infinite sequences of random variables (defined on a natural extension), the digits can be seen as an example of an infinite order chain in the theory of dependence with complete connections. As a consequence, we show fast convergence of Lebesgue measure λ to the invariant measure γ, transferring the method of Paup Lévy 1929. We thus clarify the role of the dual algorithm in the method.

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