Sum of digits, central limit theorem and b-adic odometer.

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Résumé

We are trying to understand the variation of the sum of digits when we add a fixed integer r written in base b : it gives informations on the number of carries created during such an addition. We are particularly interested in the asymptotic properties of this variation : for which density is the variation a particular integer ?
To answer this question, we will place ourselves in a more general space than the natural numbers : the b-adic integers and more precisely, in the context of the odometer. We will take the opportunity to introduce the very practical Rokhlin towers of this dynamical system. Finally, we will state a CLT related to the above question and which extends a result of Emme and Hubert.

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