Statistical properties of the simple parking process

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We consider the parking process on Z^2 with a simple occupancy scheme, which is defined as follows. Initially, all sites in $L(n) := -n, \ldots, n^2$ are empty. A site is chosen at random in L(n) and if all its nearest neighboring sites are empty, the chosen site is occupied. Once occupied, the site remains so forever. The process continues until all sites in L(n) are either occupied or have at least one of their nearest neighbors occupied. This is a very simple process, and it can be seen as a discrete counterpart of the well-known Rényi parking process. It turns out that this and more complicated "parking rules" have actually been much developed in the chemistry literature in the 60's, as a model for sequential random adsorption of molecules. The final proportion of occupied sites is an important random variable and it is natural to wonder about its basic statistical properties: we will mainly focus on law of large numbers, central limit theorem and concentration inequalities, which are very classical. This talk is based on a work in progress in collaboration with Alejandro Roldán (UdeA, Colombia), Alexander León (UdeA, Colombia) and Cristian Coletti (UFABC, Brasil).