Tame Towers and Their Graphs

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An infinite sequence $\mathcal{F} = (F_0, F_1, \ldots)$ of function fields $F_n|\mathbb{F}_q$ with $\mathbb{F}_q$ as full constant field is called a tower, if $F_0 \subsetneqq F_1 \subsetneqq \ldots$, all extensions $F_{n+1}|F_n$ are finite separable and $g(F_n) \to \infty$ as $n \to \infty$. A tower is called asymptotically good, if its limit $\lambda(\mathcal{F}) := \lim_{n\to\infty} \frac{N(F_n)}{g(F_n)}$ is positive. A special type of towers are the recursively defined towers. To determine their limits one comes to their graphs in a natural way. In this talk in particular we discuss tame towers over finite fields and their graphs. Moreover, we discuss some additional tools to calculate the exact value of the quotient $\frac{N(F_n)}{g(F_n)}$ for each $F_n|\mathbb{F}_q$ in tame towers .