Bestvina: On the asymptotic dimension of the curve complex

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w/ Ken Bromberg

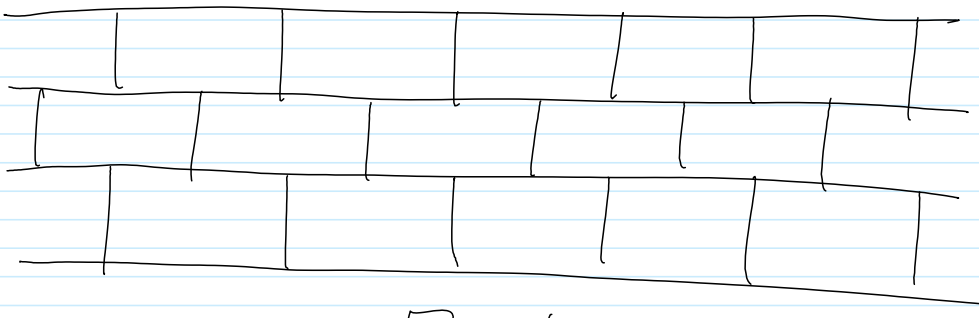
Thm The asymptotic dimension of the curve complex $\mathcal{C}(\Sigma_g)$ is bounded by $4g-5$.

X – a metric space

$\dim X \le n \iff \forall \epsilon > 0$ $\exists$ open ϵ-cover of X w/ multiplicity $\le n+1$.

$\text{as-dim } X \le n \iff \forall R > 0$ $\exists$ bndd cover s.t. every R-ball intersects at most $n+1$ sets in the cover;

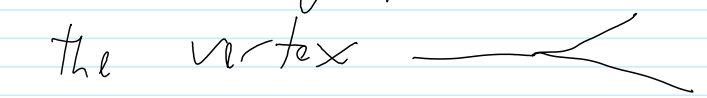
Both are 2 for $\mathbb{R}^2$:



Thm (Gromov) Γ – hyp. grp $\Rightarrow \text{as dim } \Gamma < \infty$

Pf if $N \gg R \gg \delta \ldots$

Def (Buyalo) $\text{cap dim } X \le n \iff \exists C > 1$ s.t. $\forall$ suff. small $\epsilon > 0$ $\exists C\epsilon$-bndd cover of X w/ ϵ-multiplicity $\le n+1$.

Train tracks: a graph in a surface Σ, modeled on the vertex  , such that the complement is made of polygons.