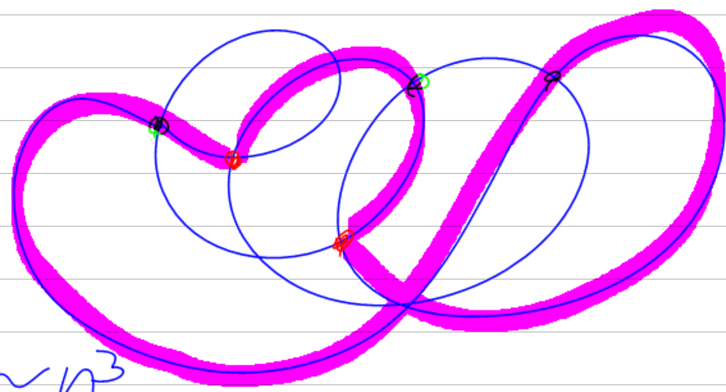
2D:

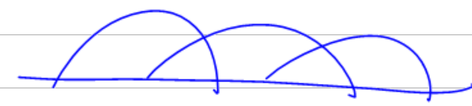


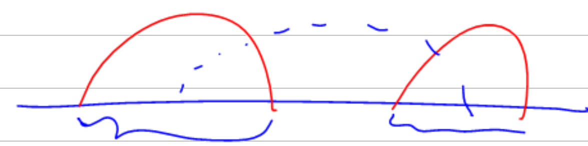
n xings

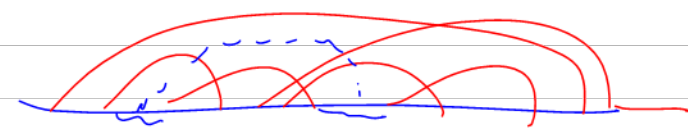
$d = 3$

$\binom{n}{3} \sim n^3$

$\binom{n}{d} \sim n^d$







$\binom{n}{d-1}$

Given two intervals on D, how compute their intersection #.

$k \backslash l$		
0		
	$\#([0,k],[0,l])$	

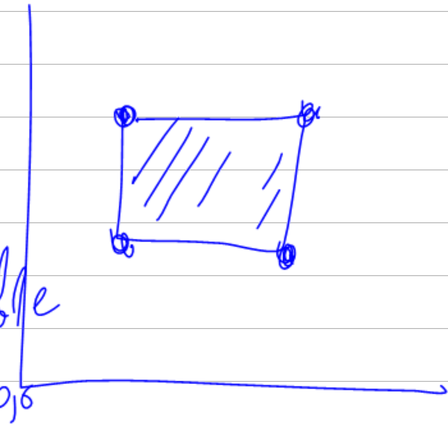
time n^2

$$\begin{array}{c|cccccc} & & & & j & & \\ \hline & 0 & 0 & 0 & 1 & & \\ i & 0 & 1 & 0 & 0 & 0 & 0 \end{array}$$

$\begin{cases} 1 & \text{if pos } i \text{ intersects pos } j \\ 0 & \text{otherwise} \end{cases}$

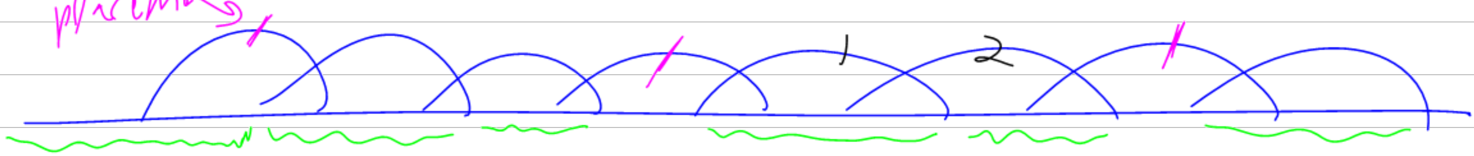
$\# [k_1, k_2) \text{ w/ } [l_1, l_2]$
$= \# [0, k_2) \text{ w } [0, l_2]$
$- \# [0, k_1] \text{ w } [0, l_2]$
$- \# [0, k_2] \text{ w } [0, l_1]$
$+ \# [0, k_1] \text{ w } [0, l_1]$

also computable in time n^2



$$\text{complexity} = n^2 + \binom{n}{d-1} \sim n^{d-1}$$

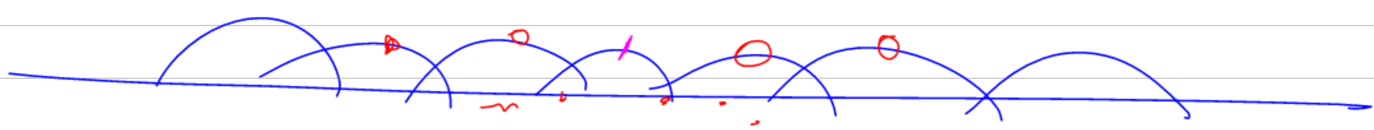
delayed placements



n^{d-3}

Q in a CD w/ d chords how many indep chords can you find, where indep means "endpoints not adjacent"?

slightly naive ans: At least $\frac{d}{5}$

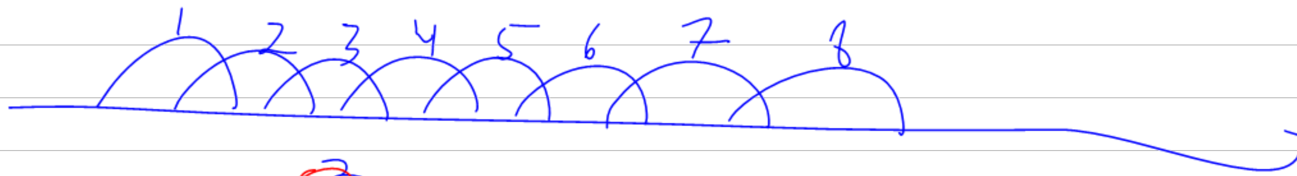


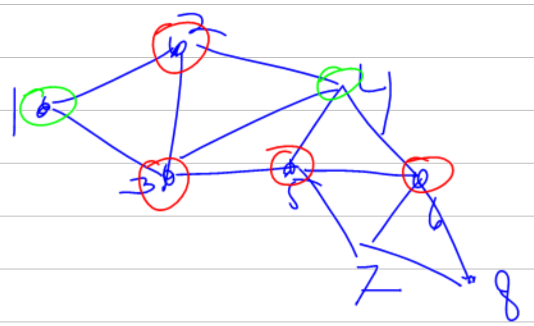
$$\text{complexity} \quad n^{4d/5} \sim (V^{4/3})^{\frac{4d}{5}} = V^{\frac{16}{15}d} > V^d$$

$n \sim V^{4/3}$

less naive ans: $\sim \frac{d}{4}$

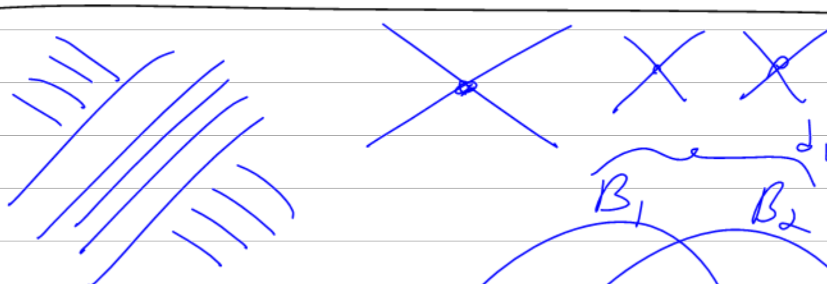
complexity $n^{3/4 d} \sim (V^{4/3})^{\frac{3}{4}d} \sim V^d$



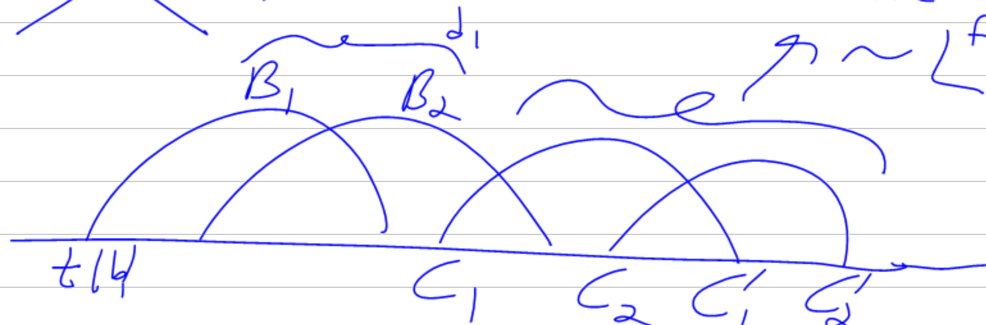


connected graph

Valency ≤ 4



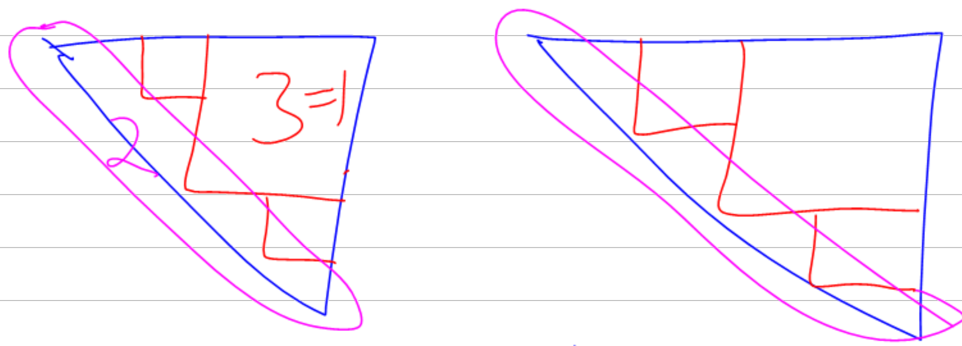
contribute

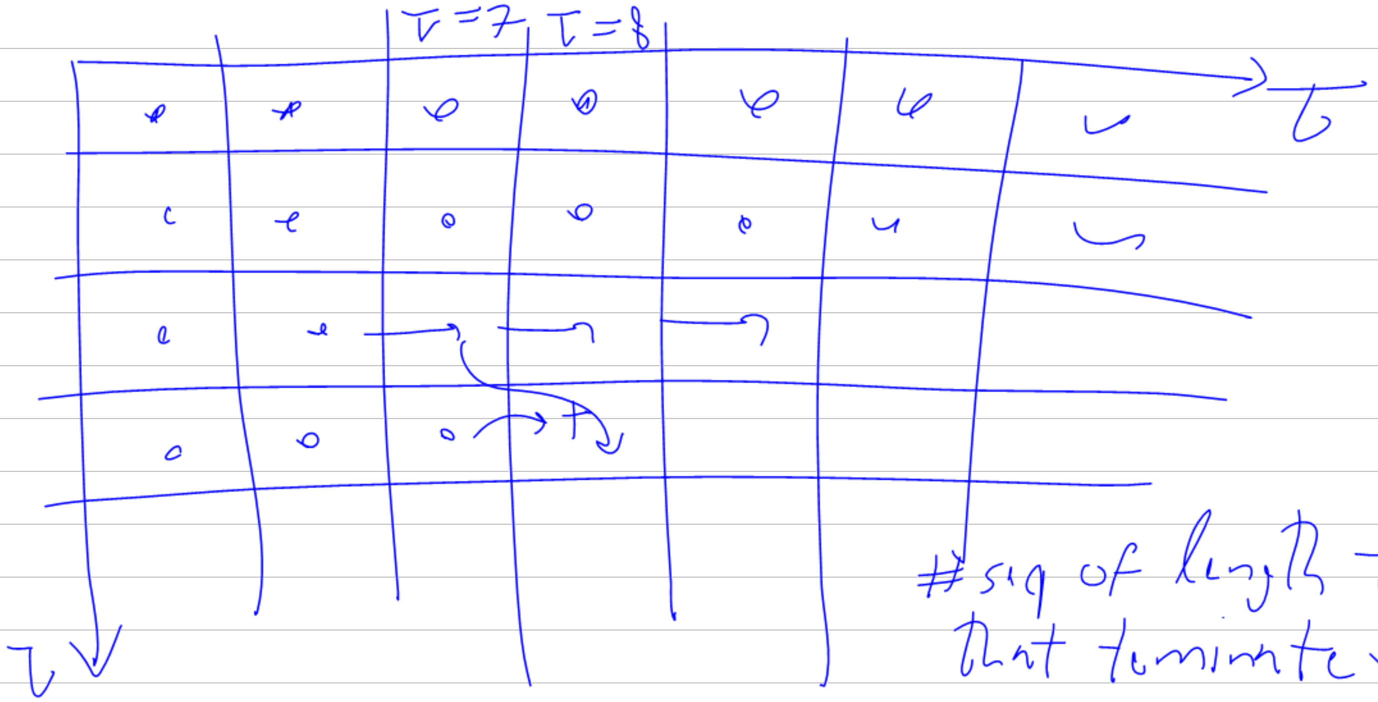


$\sim L^{\text{Fixed}}$

$t, t' : B_i \longrightarrow [0, L^3]$ $\quad [0, L^3]$

$$(\max |B_i|)^{\frac{3}{4} d_1} \cdot L^{\text{Fixed}}$$



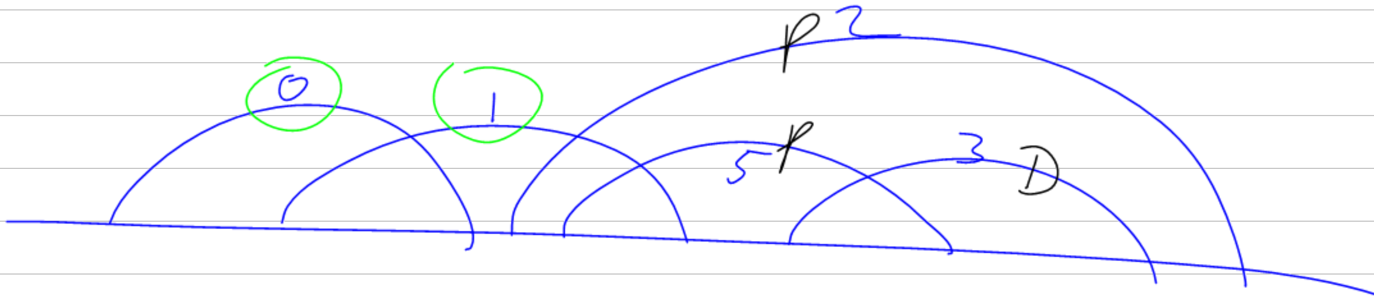


seq of length τ that terminate $\leq t$

Paper II. Some introductory words, then

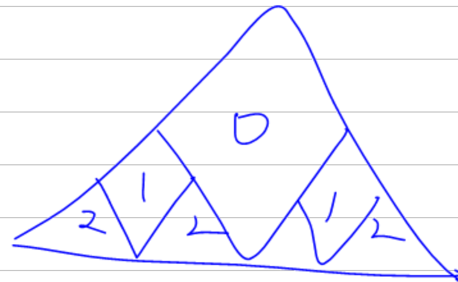
d	$C_{2D}(\mathbb{Z}_d, n)$	$C_{2D}(\mathbb{Z}_d, V^{4/3})$	$C_{3D}(\mathbb{Z}_d, V)$
0	1	1	1
1	n	$V^{4/3}$	$\lesssim V^{4/3}$
2	n	$V^{4/3}$	$\lesssim$ ___
3			
4			
5			
6			
7			
8			
general d *	Alg 1 $n^{\frac{4}{8}d}$		
	Alg 2 $n^{\frac{2}{3}d}$	...	...

*In real life, this is useless.



γ

$$L^2 2^\gamma = \left(\frac{L^4}{2^\gamma}\right)^{3/4} = \frac{L^3}{2^{3/4\gamma}}$$



$$2^{\frac{7}{4}\gamma} = L$$

$$2^\gamma = L^{4/7}$$

$$L^{18/7} = V^{6/7}$$

$$V^{6/7} d$$