Theorem 2

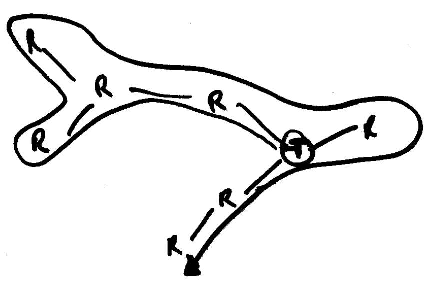
$|R| = r$ with R = set of simultaneous requests.

$\text{cost} = \sum_R \text{latencies}$

"first": find token

"rest": find predecessor.

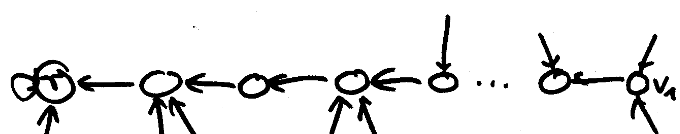
$\text{cost}_{ARROW}(R) \leq \varsigma \cdot \text{cost}_{OPT}(R)$ [+ const]



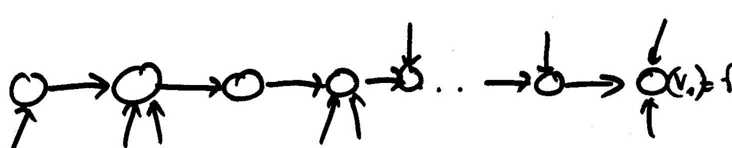
Proof: lokale Suche gibt $T \to v_1 \to v_2 \to v_3 \to \dots \to v_r$

Ⓐ $\text{cost}_{ARROW}(R) \overset{!}{=} \text{cost}_{N.N.H.T.S.P}(R)$

Conf F_0



Conf F_1



Ununterscheidbar für alle außer v_1. ⇒ Ⓐ ✓

Ⓑ $\text{cost}_{NNHTSP}(R) \leq \log|R| \cdot \text{cost}_{TSPOPT}(R)/2$ — Rosenkrantz, Stearns, Lewis [77] [Report on Quality of TSP-Heuristics]

Ⓒ $\text{cost}_{OPT}(R) \geq \text{cost}_{TSPOPT}(R)/2$

$\text{cost}_{TSPOPT}(R) \leq \text{cost}_{TSP}(R) = \text{cost}_{OPT}(R) + \text{latency}(v_r, \dots)$
$\overset{\Delta}{\leq} 2 \cdot \text{cost}_{OPT}(R)$

Th.2 continued

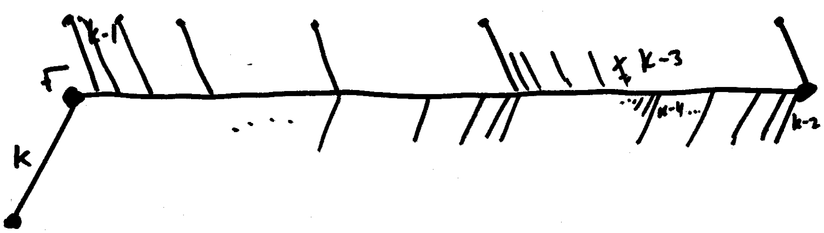
$\Rightarrow$

$$Cost_{ARROW} \overset{(A)}{=} cost_{UNHTSP} \overset{(B)}{\leq} \log r \; cost_{TSPOPT}/2 \overset{(C)}{\leq} \log r \; cost_{OPT}$$

$\Rightarrow \rho \leq \log r.$

But: $\log r$ result is for general graphs
maybe it is much better for trees?!?

Answer: Maybe... but not much.



(i) size of stem = total size of branches

(ii) $k = \theta\left(\frac{\log r}{\log \log r}\right)$ → traverse stem k times → $cost = \theta\left(\frac{\log r}{\log \log r}\right)$ - $cost_{Euler Tour}$

~~... ... 2cost 2n~~

$\rightarrow \theta\left(\frac{\log r}{\log \log r}\right) \leq \rho \leq \log r.$ ρ exactly?!?