

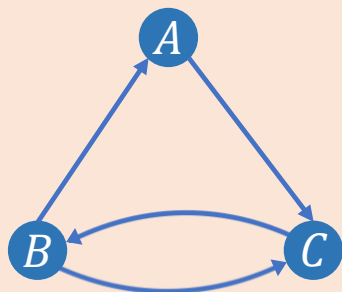
Impartial Selection with Additive Guarantees via Iterated Deletion

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n agents of a set N vote for each other

Setting

agent	votes for
A	C
B	A, C
C	B

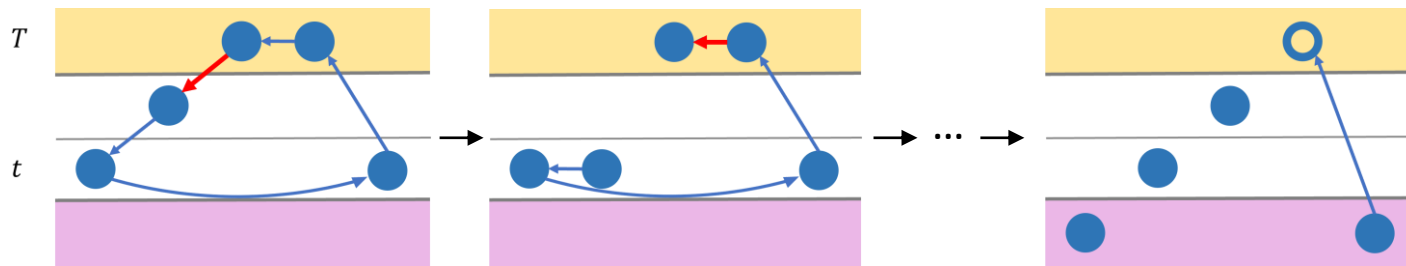


Results

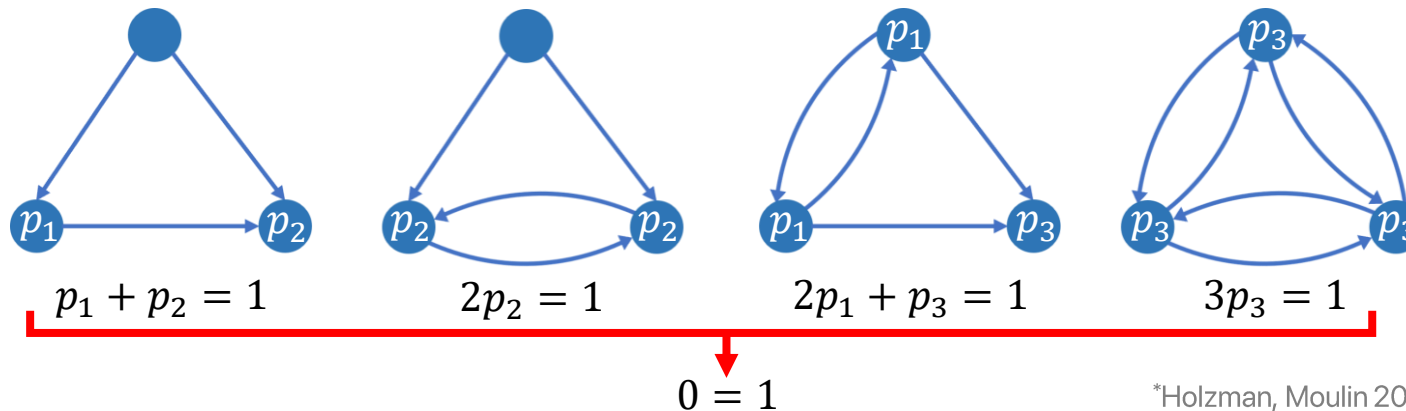
Bounds on α for impartial α -optimal mechanisms

	LB	UB
≤ 1 vote p/agent	$1 \rightarrow 3$	$\lfloor n/2 \rfloor^* \rightarrow 8\sqrt{n}$
$\leq k = O(n^\gamma)$ votes p/agent	$1 \rightarrow k$	$n - 1 \rightarrow O(n^{(1+\gamma)/2})$
arbitrary number of votes	$3^+ \rightarrow n - 1$	$n - 1$

upper bounds: Two thresholds, iterative deletion of edges



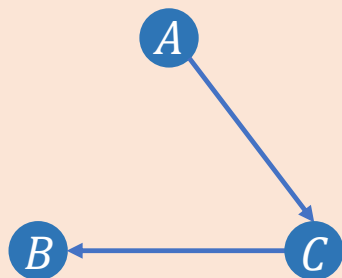
lower bounds: Graphs of ordered partitions



We study mechanisms that select ≤ 1 agent and are

i) **impartial**: No agent can influence being chosen or not.

An impartial mechanism selects B above if and only if it selects B here.



ii) **α -optimal**: The chosen agent receives $\geq \Delta - \alpha$ votes.

A mechanism that selects B in the first graph is ≥ 1 -optimal.

*Holzman, Moulin 2013

†Caragiannis et al. 2019