

# Decomposing directed graphs into strongly connected spanning subdigraphs

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## Conjecture 1 (B-J, Yeo)

$\exists$  natural number  $N$  s.t

$\forall$   $N$ -arc-strong digraph  $D=(V, A)$

$\exists A_1, A_2 \subseteq A$ ,  $A_1 \cap A_2 = \emptyset$ ,  $A_1 \cup A_2 = A$   
s.t

$D_i = (V, A_i)$  is strong  $i=1, 2$

For tournaments  $N=2$ .

## Conjecture 2 (B-J, Yeo)

Every  $k$ -arc-strong tournament  
can be arc-decomposed into  
 $k$  spanning and strong subdigraphs.

True if

- $k=2$ , or
- $\exists$  non-trivial cut of size  $k$ , or
- $\delta(T) \geq 37k$

Kelly Conjecture  $\subseteq$  Conjecture 2