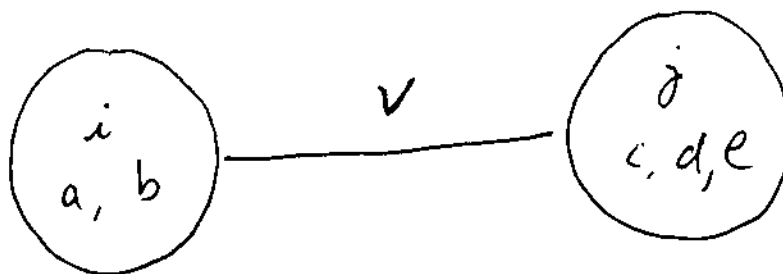


TH 4

Let a sequence of min cuts partitions the network into m circles.

For any link of value v , connecting two circles, then there exists a vertex i and a vertex j where

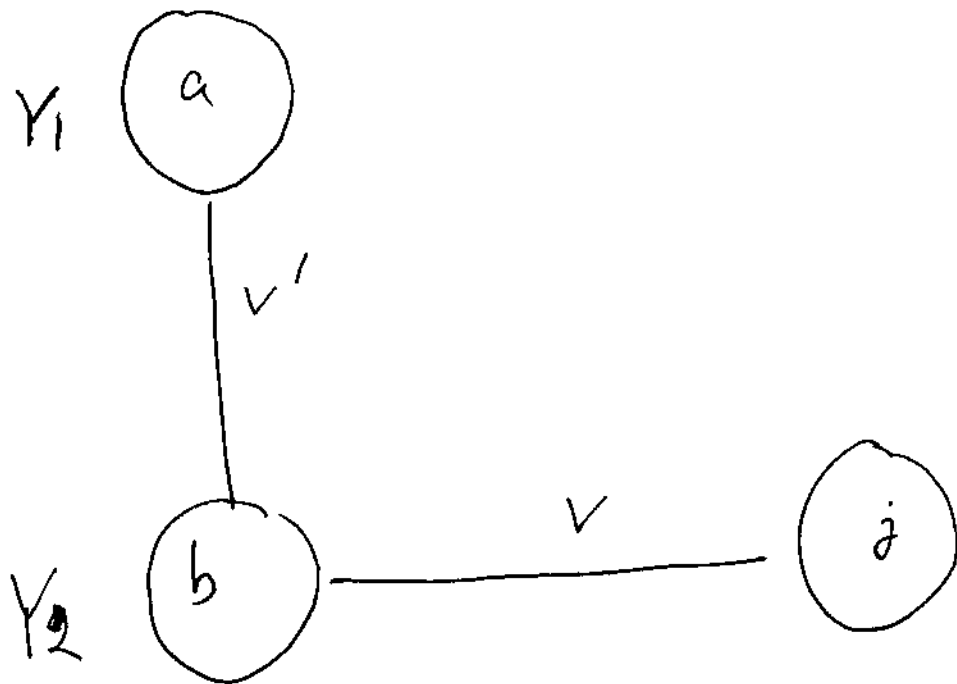
$$F(i, j) = v$$



It is true for the first link of value v

Now choose two vertices $a, b \in X$, and

Find $F(a, b) = v'$.



There are three circles with two links

Case I

$a \in Y_1, b \in Y_2, i \in Y_2$

then ^{the} ₁ assection is true

$$F(a,b) = v', \quad F(\bar{i},j) = v.$$

Case II.

$$a \in Y_1, \quad b \in Y_2, \quad \bar{i} \in Y_1$$

we want to prove that

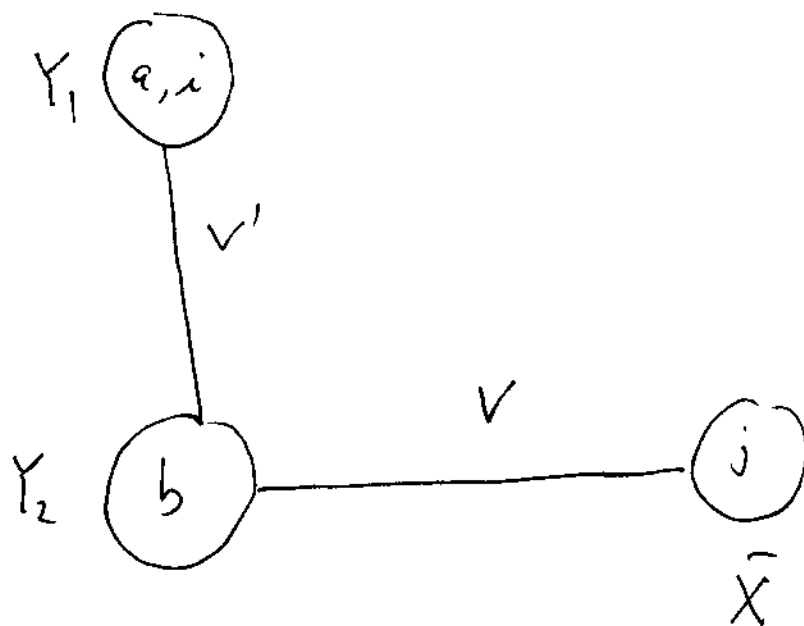
$$F(b,j) = v.$$

Condense

Y_1 into a
single node

does not

change $F(a,b)$



$$F'(a,b) = v' = F(a,b) = v'.$$

Now consider the Four max flow values

$$F'(b, j), F'(b, a), F'(a, i), F'(i, j)$$

$$F'(b, j) \geq \min [F'(b, a), F'(a, i), F'(i, j)]$$

$$\geq \min [v', \infty, v] \quad , \quad v' > v$$

$$\geq v$$

So b & j provide the two nodes

but $F'(b, j) \leq v$, since both v, v'

are cuts separating i and j .