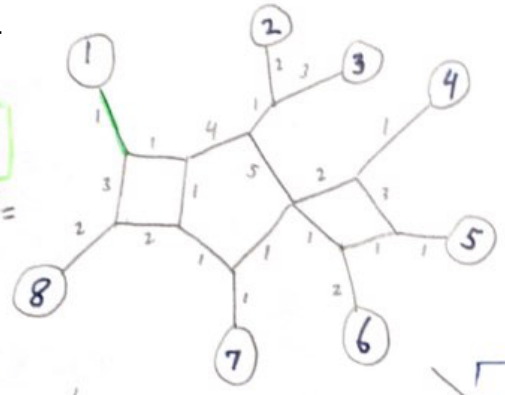
Circular planar Networks

CPN(n)

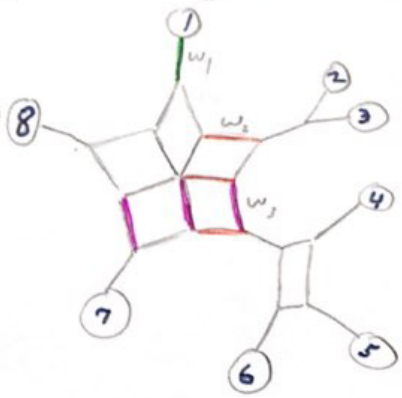
$\Gamma =$



Lemma:
The set of response matrices is in bijection with the set of resistance matrices.
Conjecture: All resistance matrices for CPN's are Kalmanson.

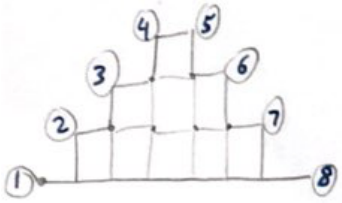
R_W

[Find $W(\Gamma)$ use Neighbor-Net]



[Find $M(\Gamma)$]

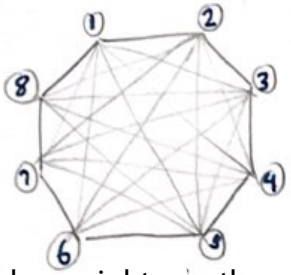
minimal network



Kron reduce

[Find $M(\Gamma)$ & $W(\Gamma)$ induce complete graph]

Γ^*_{int}

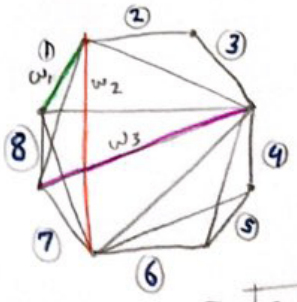


Edge weights are the conductances from M. $\Rightarrow$ same M, same W as Γ

Lemma: if $M(\Gamma) = M(\Gamma')$ then $W(\Gamma) = W(\Gamma')$

CSN(n) $\times$ $\mathbb{R}^n_+$

(trivial bridges have weight)



Split metric matrix

?

Conjecture:

Space of response matrices M $\Omega_n / \cong$

Faithful phylogenetic networks $\subseteq CSN(n) \times \mathbb{R}^n_+$

? $\rightarrow$ implications for CPNs

? $\rightarrow$ implications for Phylogenetic networks.