Graph Rubbling

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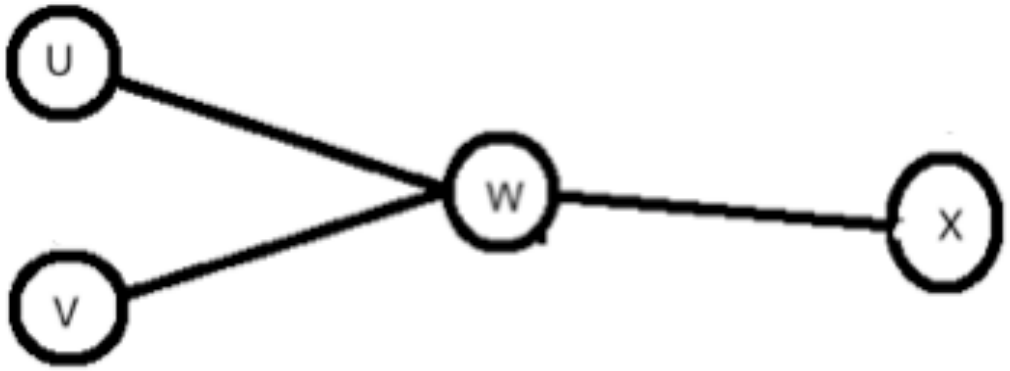
Simple, Finite, Undirected Graph G



G=(V,E)

V(G)={u,v,w,x}

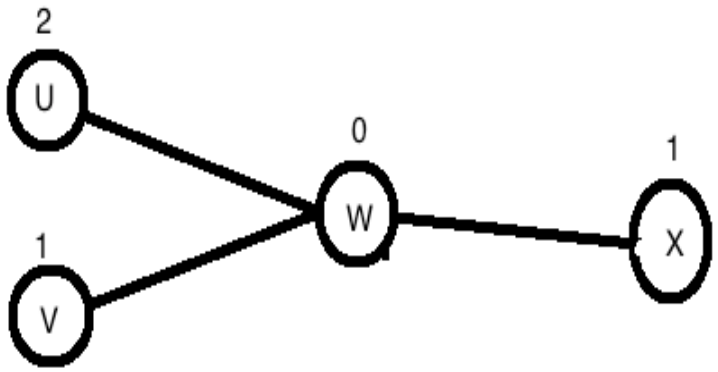
E(G)={uw,vw,xw}

Pebble Distribution

A pebble distribution, p , is a nonnegative pebble function.

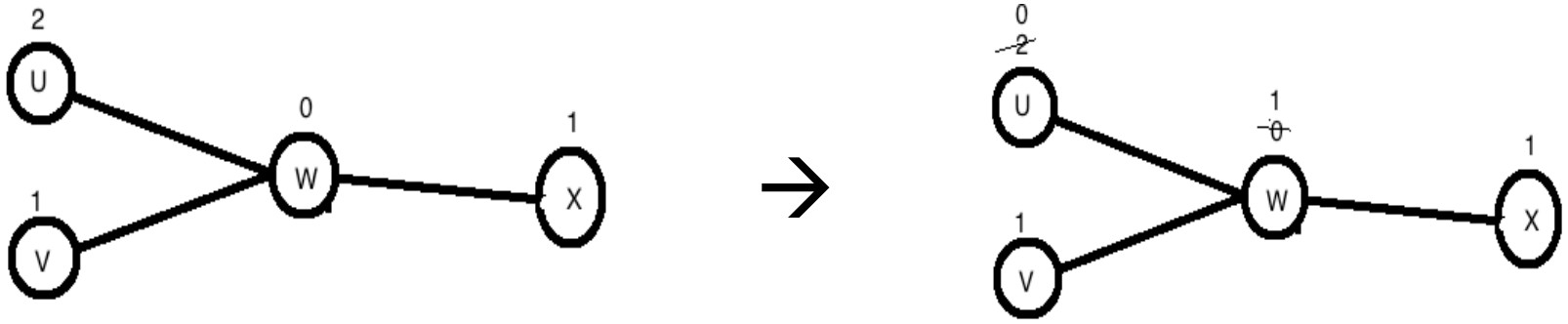
The size of the p is all the pebbles on the graph.

Pebble Function	
V(G)	p(V(G))
u	2
v	1
w	0
x	1



Pebbling Move

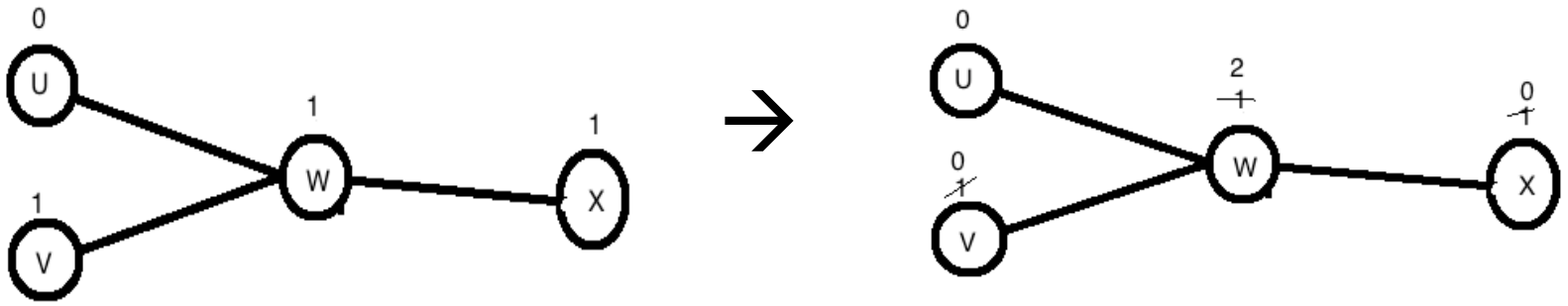
A pebbling move in a graph removes two pebbles at a vertex and adds one pebble at an adjacent vertex.



After pebbling move(u→w), it forms a new distribution.

Rubbling Moves

A strict rubbling move removes one pebble from each of x and v, and adds one pebble on w.



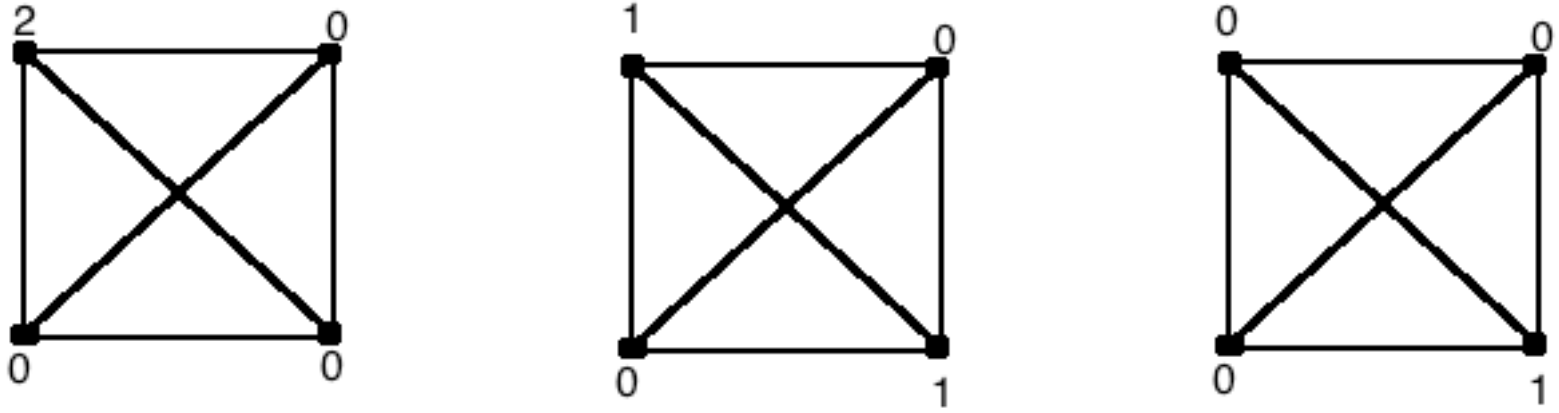
Rubbling move r=(v,x→w)

Rubbling moves include both pebbling moves and strict rubbling moves.

Rubbling Number of Graph

The rubbling number ,ρ(G), of a graph is the minimum number m that every vertex of G is reachable from any pebble distribution of size m.

For example ; $\rho(K_4)=2$



Few Facts about Rubbling

- $\rho(K_n)=2$,where K_n is the complete graph($n\geq 2$)
- $\rho(W_n)=4$ where W_n is the wheel graph($n\geq 5$)
- $\rho(C_{2k})=2^K$, where C_{2k} is an even cycle.
- $2^{diam(G)}\leq \rho(G)$

My Research Direction

Learning the results from the graph pebbling ,we will reproduce the pebbling results in terms of rubbling ,especially for the family of trees.


Thanks!