Proposition: Scaling Muon Network consensus with clusters of node

Introduction :

 This short proposal talks about game theory and not implementation.

We observe that blockchain consensus requires lots of nodes and large groups of nodes are controlled by the same entity,

We group each node inside x clusters where each node is partially slashed in case of a cheating node.
This means that we can call 80% of clusters as fast as POA and almost as secure as POS and the likelihood that an attacker can infiltrate each cluster is extremely low, because of common slashing risk forcing clusters to be careful about who they allow.

Who can be a cluster?
Only the 20 clusters each 24 hours with the most funds can be selected.

Cluster as a micro DAO :
Funds of nodes are locked for 24 hours.
Each 24 hours cluster user can vote for a change in the next 24 hours, the weight of the vote is defined by the collateral locked :
- risk rate change
- add/remove a new member

How do collective punishments work?
cluster vote for a joint punishment rate,
- If a node is slashed, if there is a 2%punishement rate, other members are 2% slashed off the amount slashed.
- If there are 20 clusters, each cluster has a score of 0.05 chance to get selected x punishment rate that is 0.02.

To select the selection rate, we normalize each score of each cluster to get the chance to be selected of all clusters equal to 1

Ban system :
80% of the cluster can vote for a ban of a node and her stack will be slashed

Frictionless collateral :
Collateral in a node is capped to avoid exploits.
If for validation, a node is selected in a cluster but doesn't have enough collateral, more nodes are selected randomly at the same time to delegate collateral in the cluster until they have enough collateral

Anti-Sybil attack :
Clusters must-have attributes that each member required to match
It allows someone to get multiple signatures without having to wait because there is a low probability of someone being in that cluster; he simply asks a node of each different attribute.