

The Node Capacitated Clique (NCC) is a new model that allows all nodes to send and receive  $O(\log n)$  bits to and (perhaps more importantly) from  $O(\log n)$  arbitrary nodes.

Given an input graph  $G=(V,E)$ , this implies on the one hand that a node can communicate with nodes not (necessarily) adjacent to it in a single round, but on the other hand cannot communicate with all its neighbors if its degree is high.

The model has been introduced to formalize (global) graph computations on networks with very limited communication capacities, e.g., nodes connected via the internet.

In this talk, we investigate the efficient simulation of random walks in the NCC and present an application.

Given a graph  $G=(V,E)$  with arboricity  $a$ , we provide a generic algorithm that allows all nodes to start  $d(v)$  random walks of length  $l$  in time  $O(a+l^{1/2})$  if the input graph is sufficiently sparse.

As application we present ideas for a property tester for conductance which beats the runtime of the best known tester in the CONGEST model.