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Distributed Algorithms in Multihop Broadcast Networks

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Abstract

The paper addresses the problem of solving classic distributed algorithmic problems under the practical model of Broadcast Communication Networks. Our main result is a new Leader Election algorithm, with $O(n)$ time complexity and $O(n \cdot \lg(n))$ message transmission complexity. Our distributed solution uses a special form of the propagation of information with feedback (PIF) building block tuned to the broadcast media, and a special *counting and joining* approach for the election procedure phase. The latter is required for achieving the linear time.

It is demonstrated that the broadcast model requires solutions which are different from the classic point to point model.