

# Secure and self stabilizing clustering in sensor networks

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Clustering is an important tool for wireless ad hoc networks in general and in wireless sensor networks in particular. Clusters can be used for routing, for message aggregation and many other things.

Self stabilization is important for wireless sensor networks because due to the harsh environments and the ad hoc nature of the network assumptions might be temporarily broken and nodes might end up in bad states. In the worst case this makes the network end up in an arbitrary configuration. Algorithms that can stabilize from an arbitrary configuration to a working configuration within a finite time after assumptions holds again is thus very valuable.

A network in which messages go through a small set of nodes is a vulnerable to security threats as capturing a few of those nodes and having them report or tamper with protocols can give out a lot of information and/or do a lot of damage to the system.

We are working on a self stabilizing clustering algorithm for wireless ad hoc networks that aims for redundant cluster heads (nodes that takes some responsibility on behalf of a cluster) as well as redundant message paths between ordinary nodes and cluster heads and between different cluster heads.