



Current Research Issues in Wireless Ad Hoc Networks

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Main Areas

- Routing
- Spatial reuse
- Power saving
- Topology control
- Multicast
- Sensor networks
- Other issues



Routing

- Shortest path routing
- Multipath routing vs. Single path routing
 - Do not need many Multipath routes[1]
 - Choosing the shortest Multipath route[2]
- On-demand path routing
 - [3](鄔智仁)



Routing (cont.)

○ Route Optimization

- Energy efficient routing

- [5][6](柳陽春)

- Packet relay issues

- [4] using game theory to judge if the node should relay packets to others.

- Bandwidth allocation[15]



Spatial Reuse

○ Power Control

- Clustering [11](劉仁筑)
 - Optimization clustering[16]
- MAC layer modification
 - Dual channel[12](劉仁筑)
 - RTS/CTS[12]
- On demand power management [13]



Spatial Reuse

- Smart antenna
 - Routing [21](何德威)
 - Beam forming algorithm (潘孟鉉)
 - Network throughput[32]
 - Power control [19]
 - Neighbor discovery [17]
 - MAC protocol design [20](何德威)
 - MIMO (Multiple Input Multiple Output)
 - (ICC 2003)



Power saving

- Energy-Efficient Collision Resolution [14]
- Reduce message flooding
- Sleeping
- Power saving MAC
- Smart Antenna
- ...



Topology Control

- Usually for power control and routing[22][23]
- Minimum spanning tree [22]
- Clustering[23]
- Impact of interference[24]
- Location or position management



Multicast

- To minimize total energy consumption [25]
- Reliability of multicast protocol in Ad Hoc [26]
- Neighbors' information exchange [27]
- ...



Sensor Networks

- Sensor Deployment [29](黃廷愷)
- Location Detection[30]
- Routing
- Reducing energy consumption [31](沈易宗)
 - Data compression
- Sensor management
- ...



Other issues

- Network capacity
- TCP performance
- Security and Services
- ...