Backwards compatibility

How to make a MIMO-OFDM system backwards compatible and coexistence with 11a/g at the link level.

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The PAR

- Some of the modes of operation defined in the HT amendment shall be backwards compatible and interoperable with 802.11a and/or 802.11g.

Meaning for MIMO-OFDM

- Any higher order MIMO-OFDM system (with n Rx antennas) can receive a signal from a lower order MIMO/SISO transmitter (< n Tx antennas, SISO = 11a or 11g)
  - Detection of preamble, interpretation of the header:
    - Determining the number of transmit antennas (number of data streams) and switch Rx accordingly
- Any higher order MIMO-OFDM transmitter (n Tx antennas) can transmit a signal that a lower order MIMO/SISO receiver can receive
  - Switch back to (ultimately) 11a or 11g

* order of MIMO system is dependent on # Tx antennas

Coexistence requirement

- Any lower order system (with n Rx antennas) that cannot receive data of a transmitter (with more than n antennas) defers while this transmitter is sending, because it is capable to detect the start of this transmission and retrieve the length (duration) of this transmission.
  - Defer not on power only
  - Detection of the preamble and interpretation of the length field,
  - Using existing multirate capabilities of the current standard(s)

Backward Compatible Preambles

- 11a/g preamble structure must be maintained
- Two examples are given of preamble structures that can be made backward compatible and coexistent:
  - Repetition preamble
  - Diagonally loaded preamble
- 3rd way: use protection mechanisms as defined in 11g

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