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RP-212100

Views on MIMO Enhancements for Rel-18

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Background

Controversial items after initial phase discussion (RP-211651)

- Example Area 1 - Further enhancements for CSI (e.g., mobility, overhead, etc.)
  - Enhancement for high/medium mobility, (Not controversial in framework), including, e.g.,
    - Time-domain correlation/doppler-domain based CSI feedback or overhead reduction
    - Enhancement of CSI acquisition for TDD via SRS enhancement
  - Enhancement for M-TRP URLLC
- Example Area 2 - Evolved handling of multi-TRP and multi-beam
  - Extend Rel-17 Unified TCI framework, e.g., combined MTRP schemes, more generic
  - Enhancement for Coherent-JT/D-MIMO, including e.g., codebook, CSI reporting, spatial domain interference avoidance
  - Overhead and/or Latency reduction for beam management procedure/beam acquisition procedures, more generic
  - Asynchronous M-TRP/Multiple TA for M-TRP
- Example Area 3 - CPE-specific considerations
  - Priority of CPE: Lower Priority

Area 1 - Further enhancements for CSI

- The scope of the following items are not clearly defined
  - Enhancement of CSI acquisition for TDD via SRS enhancement
    - SRS has been enhanced in Rel-17 already.
    - Open to discussion if the problem and the solutions can be better defined with more clarity
  - Enhancement for M-TRP URLLC
    - The scope is too broad. A more specific scope is needed.

Area 2 - Evolved handling of multi-TRP and multi-beam

- For overhead and/or latency reduction for BM, we are fine to keep it general with detailed topic(s) to be further down selected in Rel-18 as in Rel-17. Otherwise, the preferred topics from our side include
  - UE initiated beam selection/measurement/reporting
  - Pre-determined beam switch for predictable trajectory
  - Beam failure recovery enhancement, e.g. UL BFR, PCell BFR via SCell
  - Early beam refinement during RACH procedure

- For asynchronous M-TRP/Multiple TA for M-TRP, we suggest to replace “M-TRP” with “mTRP and inter-cell beam management”
  - Similar issue exists for inter-cell BM, which also has multiple TRPs/cells. But it is based on single TRP operation in Rel-17. To our understanding, it does not belong to mTRP and does not support various schemes for sDCI/mDCI based mTRP

Area 2 - Evolved handling of multi-TRP and multi-beam

- CSI related enhancement for Coherent-JT/D-MIMO should **NOT** be included in Rel-18
  - Gains of supporting coherent-JT/D-MIMO over NCJT with Rel-17 CSI under realistic assumptions is unclear and questionable.

- “Increasing the number of orthogonal DL [and UL] DMRS ports both for S-TRP and M-TRP” could be a standalone area rather than a sub-area under multi-TRP, because this is a generic DMRS enhancement that applies to both S-TRP and M-TRP.

Area 3 - CPE-specific considerations

- CPE shouldn’t be treated as a low priority item
  - Many companies showed interest in this topic
- Supporting 4096-QAM for DL is essential for NR FWA
  - Low mobility, high SNR and rank deficiency associated with LOS CPEs motivate exploring the possibility of adding 4096-QAM support

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