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RP-233376

3GPP TSG RAN meeting #102

Edinburgh, Scotland, December 11-15, 2023

Agenda Item: 9.1.1.2

Views on scope for NR MIMO evolution in Rel-19

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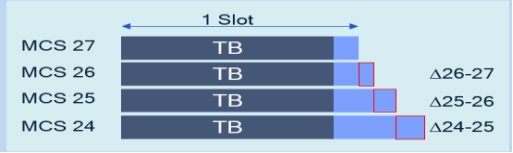
Views on open loop precoder cycling for UL

- In [1], open loop precoder cycling for UL was proposed to improve UL TX diversity.
- In our view, the following need to be studied in RAN1 before supporting the above scheme in Rel-19.
  - Performance comparison with other UL diversity schemes such S-CDD.
  - Implementation complexity in the UE and gNB.

Link Adaptation – Coding rate adaptation enhancements

- **Motivation**: Current coding rate adaptation performs far from optimal and far from the channel capacity
  - An enhanced coding approach can closely track the channel capacity, even for highly mobile terminals, achieving significant gains over the current scheme

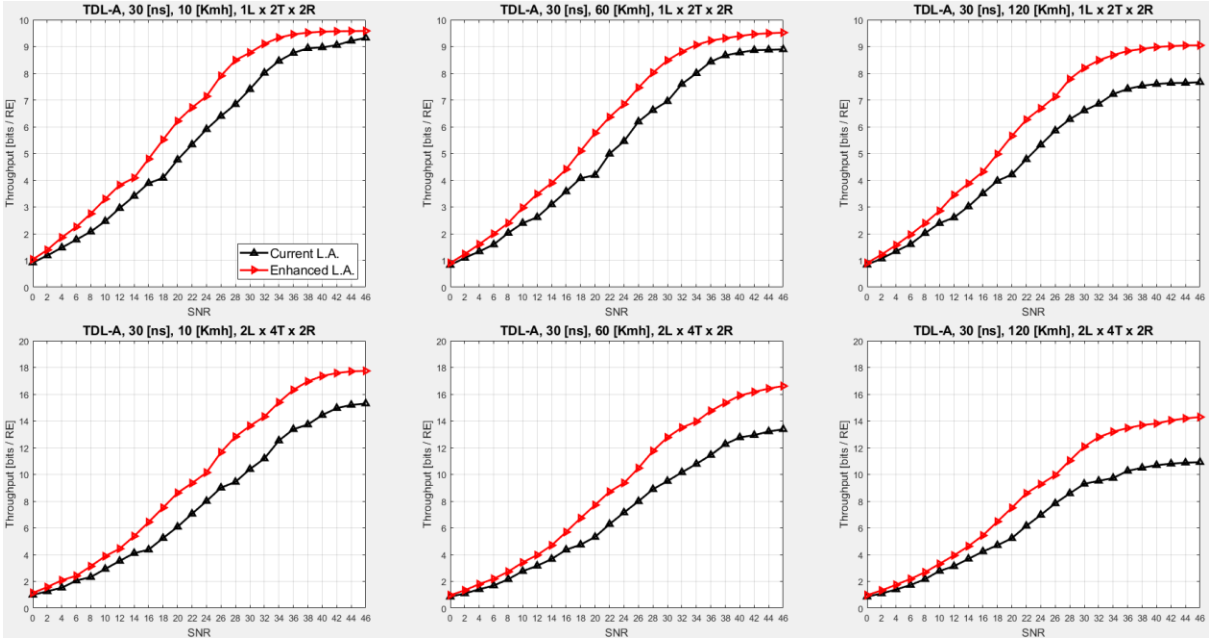
- **Proposal**: Enhanced coding rate and link adaptation through HARQ combining
  - Method
    - Utilizing Soft NACK reflecting channel capacity (i.e., Gap-to-capacity indicating missing parity bits on accumulated TXs
    - Reduce rate by the following Re-Tx such that the rate corresponds to the reported channel capacity
    - LA utilizes soft-HARQ reports to update CSI reports, OL captures enhanced rate adaptation to fit BLER & latency requirements



  - Significant gains over current scheme

	With interleaver	w/o interleaver
1L, 10 [Km/h]	6	5.5
1L, 60 [Km/h]	6	5
1L, 120 [Km/h]	8	6.5-7
2L, 10 [Km/h]	7.25	6.5
2L, 60 [Km/h]	15	13.5-14
2L, 120 [Km/h]	Inf	Inf

Performance gains [dB], @ 70% maximal throughput



Reference

- [1] RP-231790, “Views on MIMO evolution in Rel-19”, vivo, 3GPP TSG RAN Meeting #101, Bangalore, India, September 11-15, 2023.

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