

Motivation for new WI on SRS Enhancements for LTE

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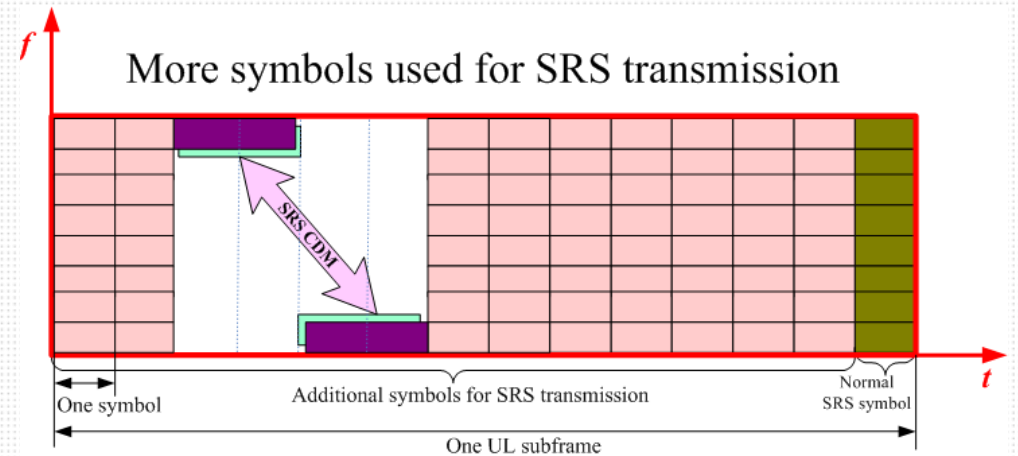
SRS capacity and coverage enhancement

Motivation:

- Massive MIMO in TDD system is sensitive to SRS periodicity. In case of short SRS periodicity configured, the number of supported SRS UEs is limited. For UEs in poor coverage, SRS repetition will also severely reduce the capacity of SRS.
- The SRS performance for cell edge or deep coverage UE suffers from low SNR. The inaccurate SRS estimation can not efficiently exploit the advantages of massive MIMO. SRS coverage enhancement is needed.

Objective:

- Configure more SRS resources in UL normal subframe
 - FDM with PUCCH, PUSCH and PRACH
 - SRS repetition at least in one UL normal subframe
 - CDM over time domain for SRS



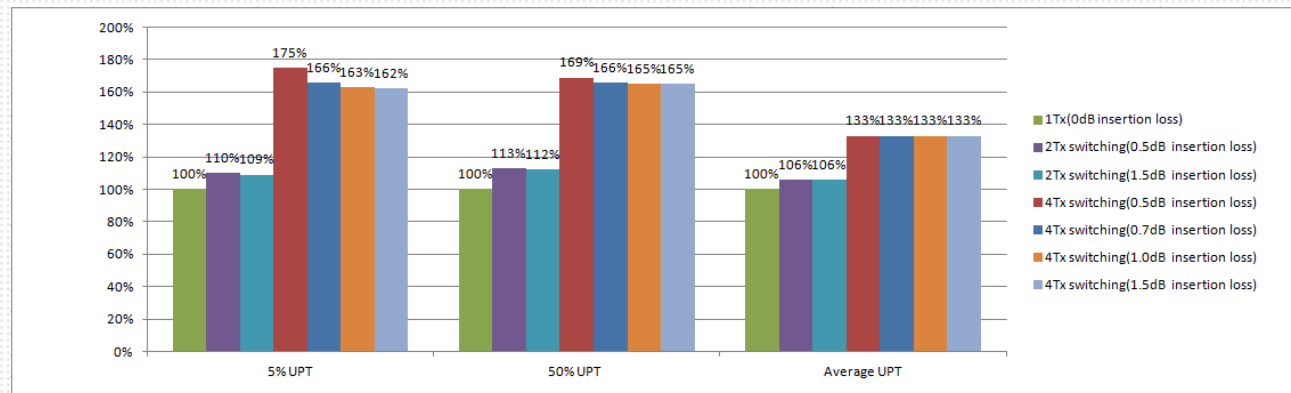
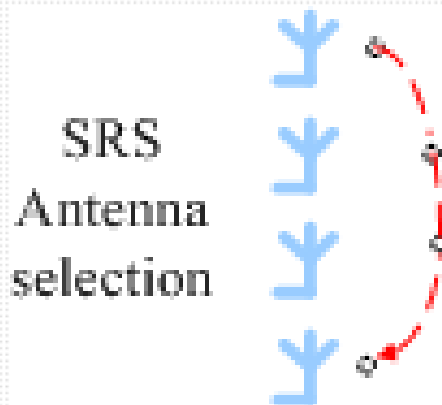
4 TX SRS antenna selection

Motivation:

- The UEs with 4 receive antennas is becoming popular in the market. However, only one transmit antenna cannot benefit from the channel reciprocity due to part of channel information. 4TX SRS antenna selection is beneficial to enhance UL channel estimation accuracy at a serving eNB. The throughput of both 5% UPT and 50% UPT can be significantly improved (about 65% gain for 5% UPT and 33% gain for average UPT).

Objective:

- Support 4TX SRS antenna selection



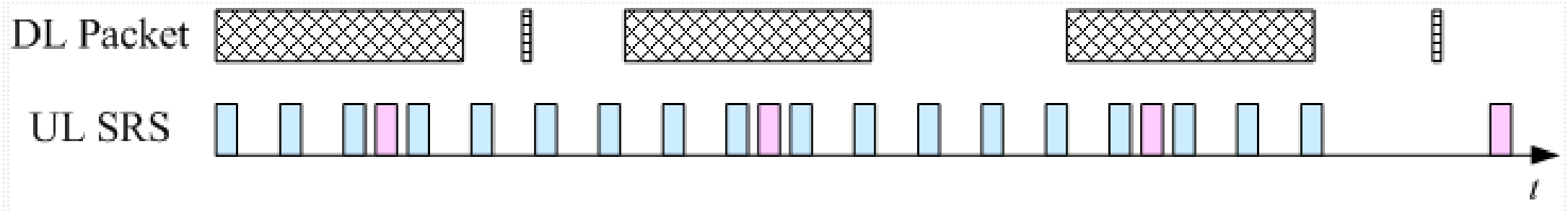
Dynamic SRS configuration

Motivation:

- The current SRS transmission is configured by high layer which cannot be adaptive to the dynamic traffic characteristics. For large size packet transmission, short SRS configuration period is preferred. For regular heart-beat or small packet transmission, long SRS configuration period is used.

Objective:

- Dynamic SRS configuration (e.g., period, SRS subframe offset, number of SRS configurations, etc.) to adapt fast traffic variation



SRS interference randomization

Motivation:

- SRS resource is allocated by individual cell without assuming inter-cell coordination, which might cause significant inter-cell SRS interference with the same hopping pattern. The interference will degrade the quality of SRS reception, which in turn leads to poor DL performance.

Objective:

- Introduce virtual cell ID for SRS configuration