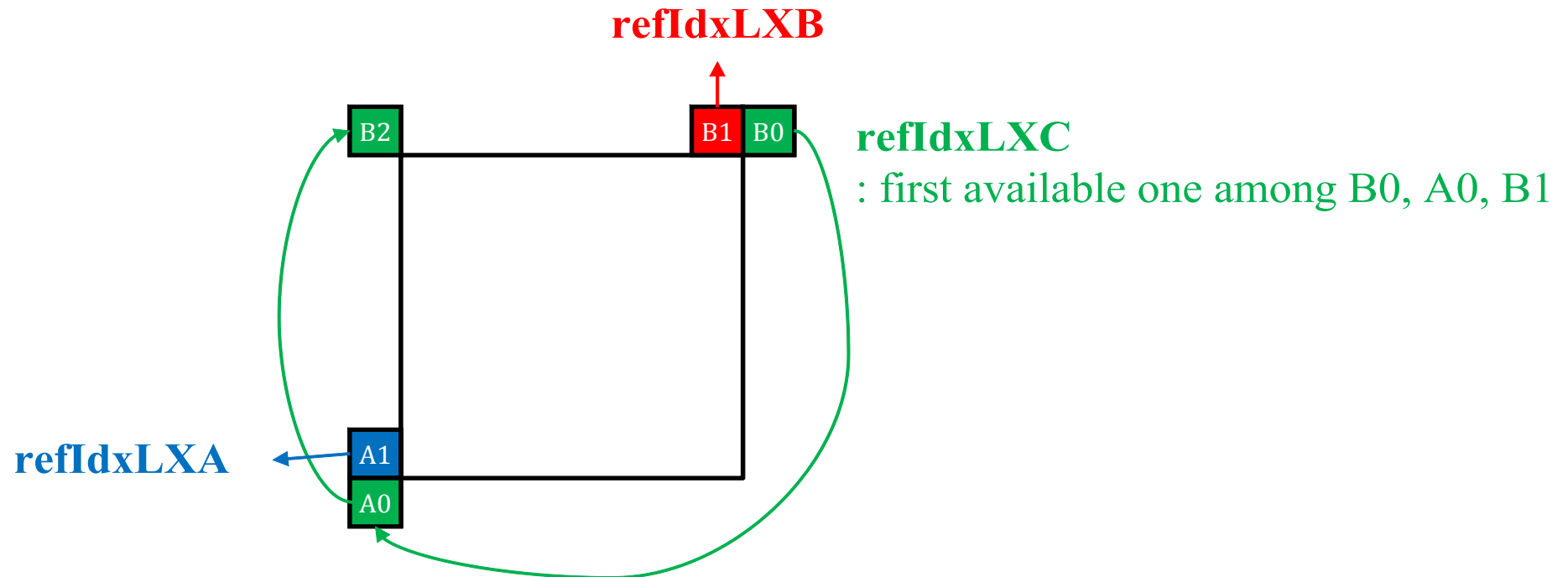# Non-CE9: Simplification of merge/skip TMVP ref_idx derivation

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JCTVC-G163

TMVP refIdx derivation in merge/skip

- Use 5 positions

- 3 positions need to be checked for refIdxLXC in the worst case

- This process needs several comparisons and condition checks

refIdxLXB

B2

B1 B0

refIdxLXC
: first available one among B0, A0, B1

refIdxLXA

A1

A0

Simplifications

- **SP01**

  Fix to 0

- **SP02**

  Min(Left, Above)

- **SP03**

  If GPB,

  Min(Left, Above)

  Otherwise,

  0.

- **SP04**

  Left ➔ *Above* ➔ *0*

- **SP05**

  Left ➔ *0*

- **SP06**
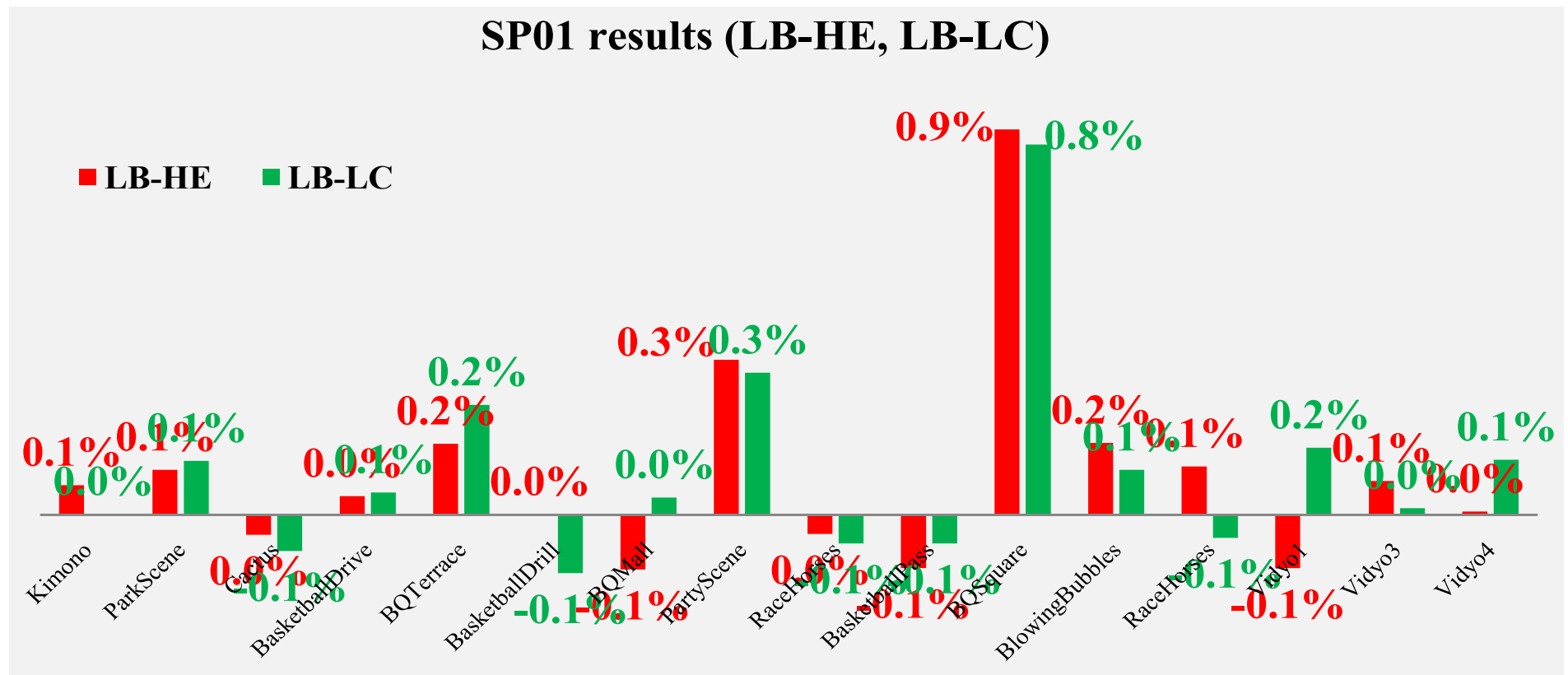
  If GPB,

  Left ➔ *0*

  Otherwise,

  0.

Simulation results

- Anchor : HM4.0

- For all cases, **0.0%** loss *except LB configurations of SP01*

- Loss for *SP01* is also small
  - 0.1% for Y,   0.3~0.7% for U,   0.4~0.5% for V

	RA-HE			RA-LC			LB-HE			LB-LC		
	Y	U	V	Y	U	V	Y	U	V	Y	U	V
SP01	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	**0.1%**	**0.3%**	**0.4%**	**0.1%**	**0.7%**	**0.5%**
SP02	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%	0.0%	0.2%	0.0%
SP03	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%	0.0%	0.2%	0.0%
SP04	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.0%	0.1%	-0.1%
SP05	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%
SP06	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%

Recommendation

■ *However, **the loss of SP01 is significant (0.8~0.9%) for some sequences** even though the average loss is 0.1%*

■ *If we fix it to 0, the loss could be significant in general video sequences other than video sequences of the common test condition*

SP01 results (LB-HE, LB-LC)

Recommendation

- Recommend to adopt **SP05** (Left→0) or **SP06** (If GPB, SP05. Otherwise, SP01) because they are *the simplest ones with average 0.0% loss*

LB-HE (SP01 vs SP05)

LB-LC (SP01 vs SP05)