



**JCTVC-L0105**

# **Non-TE5.1: MPM derivation and coding**

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# Modified MPM derivation

- Intra BL mode is often relevant for the corresponding EL CU
- Principle: set MPM0 to BL mode when BL mode is angular

If (  $BL < 2$  or  $BL > 33$  )                       $\rightarrow$                       apply usual MPM derivation

Otherwise

MPM0 = BL

If Left and Top  $\neq$  BL

MPM1 = Left

MPM2 = Top

If Left or Top  $\neq$  BL

MPM1 = Left or Top

MPM2 = (  $MPM1 < MPM0$  ) ? (  $MPM0+1$  ) : (  $MPM0-1$  )

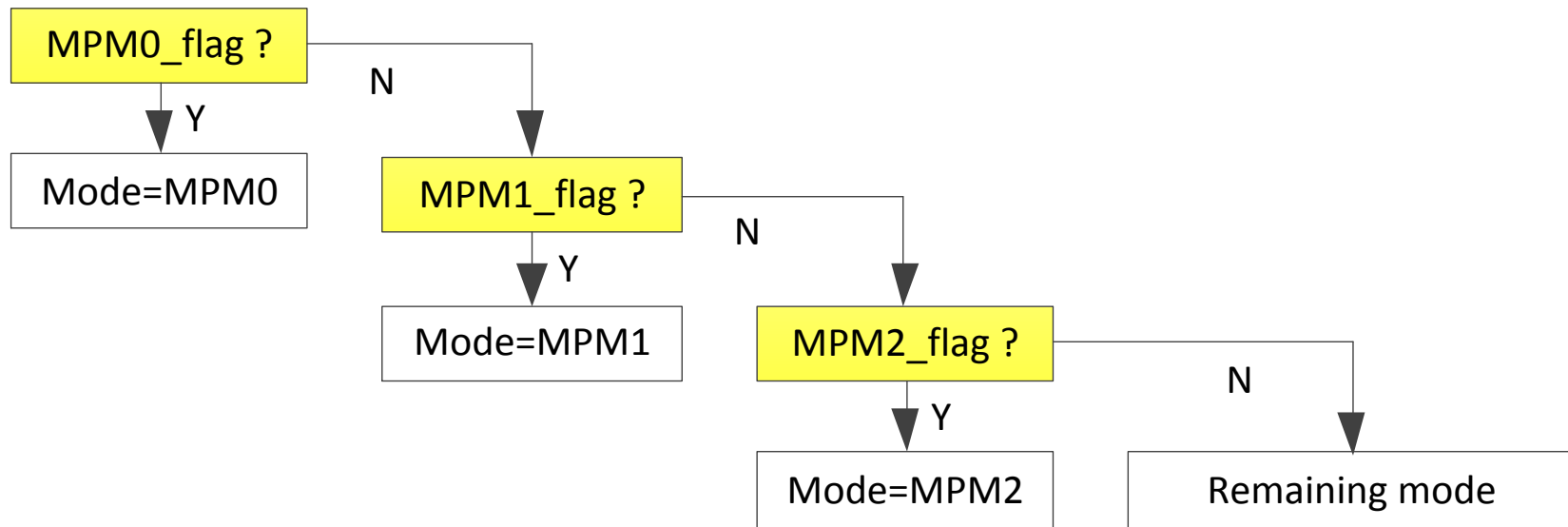
If Left and Top = BL

MPM1 =  $MPM0-1$

MPM2 =  $MPM0+1$

# Modified Coding Tree

- Principle: since BL mode most often relevant, use 1 bit to signal BL mode (i.e. MPM0) or not



# Results

## ■ MDCS ON

	AI HEVC 2x			AI HEVC 1.5x		
	Y	U	V	Y	U	V
Class A	-0.30%	-0.11%	-0.01%			
Class B	-0.45%	-0.28%	-0.29%	-0.17%	0.08%	0.06%
<b>Overall (EL+BL)</b>	-0.40%	-0.23%	-0.21%	-0.17%	0.08%	0.06%
<b>Overall (EL)</b>	-0.71%	-0.33%	-0.28%	-0.42%	0.29%	0.24%
Enc Time[%]		103.4%			103.0%	
Dec Time[%]		100.5%			100.0%	

- RA2x -0.1%, RA1.5x -0.1%, LD2x 0.0%, LD1.5x: 0.0%

## ■ MDCS OFF

	AI HEVC 2x			AI HEVC 1.5x		
	Y	U	V	Y	U	V
Class A	-0.24%	0.02%	0.10%			
Class B	-0.28%	-0.05%	0.01%	-0.15%	0.11%	0.11%
<b>Overall (EL+BL)</b>	-0.27%	-0.03%	0.04%	-0.15%	0.11%	0.11%
<b>Overall (EL)</b>	-0.49%	-0.01%	0.11%	-0.38%	0.32%	0.36%
Enc Time[%]		103.2%			102.9%	
Dec Time[%]		100.3%			100.2%	

- RA2x -0.1%, RA1.5x 0.0% , LD2x 0.0% , LD1.5x: 0.0%

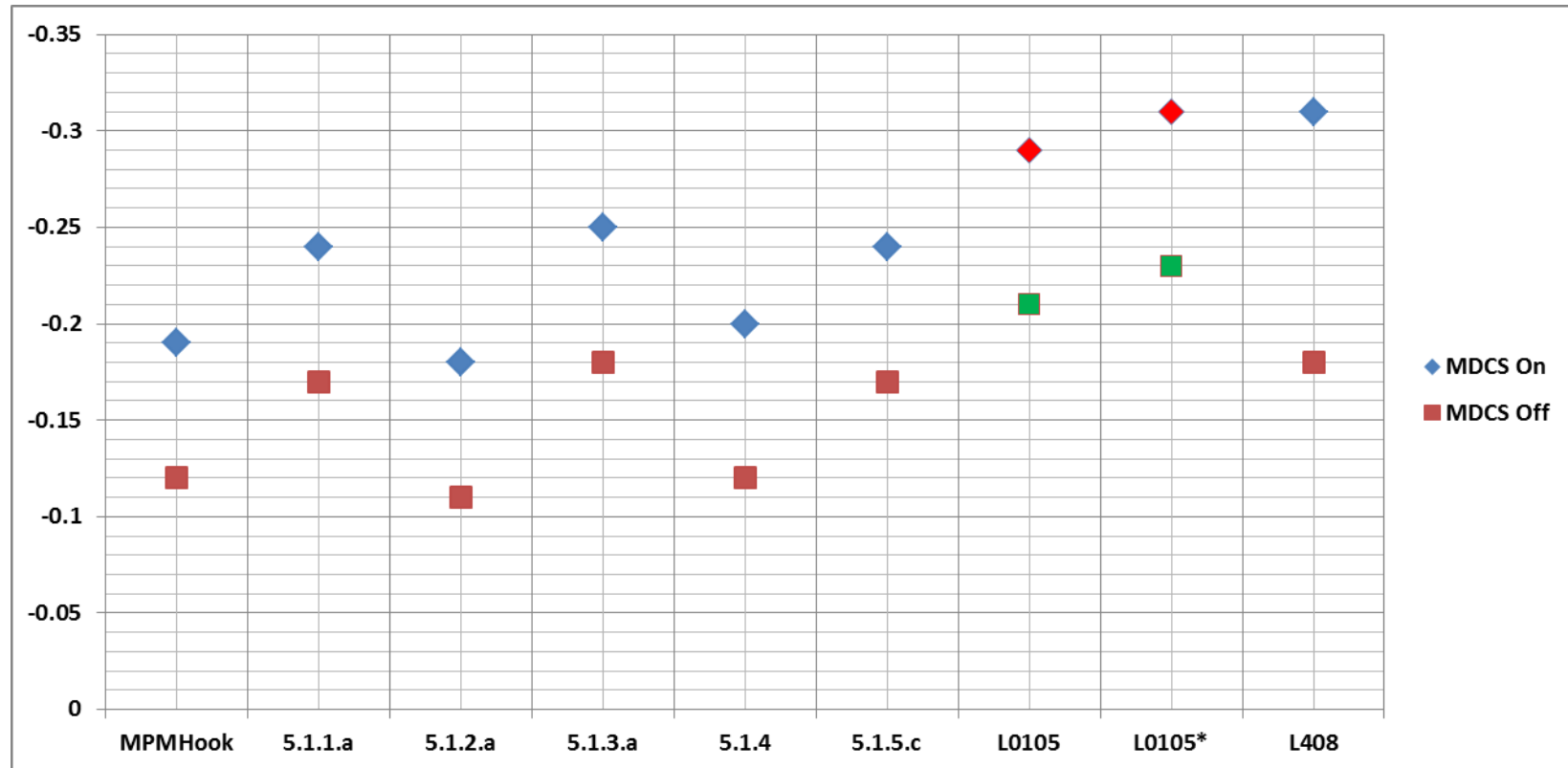
# Comparison with TE5.1 results

	parsing	AI HEVC 2x (EL)			AI HEVC 1.5x (EL)			avg Y
	dependency	Y	U	V	Y	U	V	
5.1.2.a	Yes	-0.25	-0.13	-0.12	-0.10	0.07	0.06	<b>-0.18</b>
SMuC0.11 MPM Hook	Yes	-0.27	-0.13	-0.11	-0.11	0.08	0.06	<b>-0.19</b>
5.1.4	Yes	-0.28	-0.13	-0.11	-0.11	0.08	0.06	<b>-0.20</b>
5.1.5.c	Yes	-0.32	-0.20	-0.17	-0.15	0.08	0.06	<b>-0.24</b>
5.1.1.a	Yes	-0.31	-0.18	-0.17	-0.17	0.05	0.04	<b>-0.24</b>
5.1.3.a	Yes	-0.36	-0.24	-0.20	-0.13	0.07	0.07	<b>-0.25</b>
proposal	Yes	-0.40	-0.23	-0.21	-0.17	0.08	0.06	<b>-0.29</b>
proposal+5.1.1 tricks	Yes	-0.41	-0.21	-0.20	-0.20	0.08	0.06	<b>-0.31</b>
5.1.2.b	No	-0.13	0.06	0.12	-0.09	0.09	0.10	<b>-0.11</b>
5.1.5.d	No	-0.20	0.00	0.08	-0.13	0.09	0.11	<b>-0.17</b>
5.1.1.b	No	-0.19	0.02	0.08	-0.15	0.08	0.09	<b>-0.17</b>
5.1.3.b	No	-0.24	-0.04	0.04	-0.12	0.09	0.11	<b>-0.18</b>
proposal	No	-0.27	-0.03	0.04	-0.15	0.11	0.11	<b>-0.21</b>
proposal+5.1.1 tricks	No	-0.28	-0.01	0.05	-0.18	0.12	0.13	<b>-0.23</b>

5.1.1 tricks:

1. take BL mode colocated with center of EL CU
2. replace IBL by BL mode in EL neighboring CUs
3. if mode is IBL, scan is same as DC mode

# Comparison with TE5.1 results



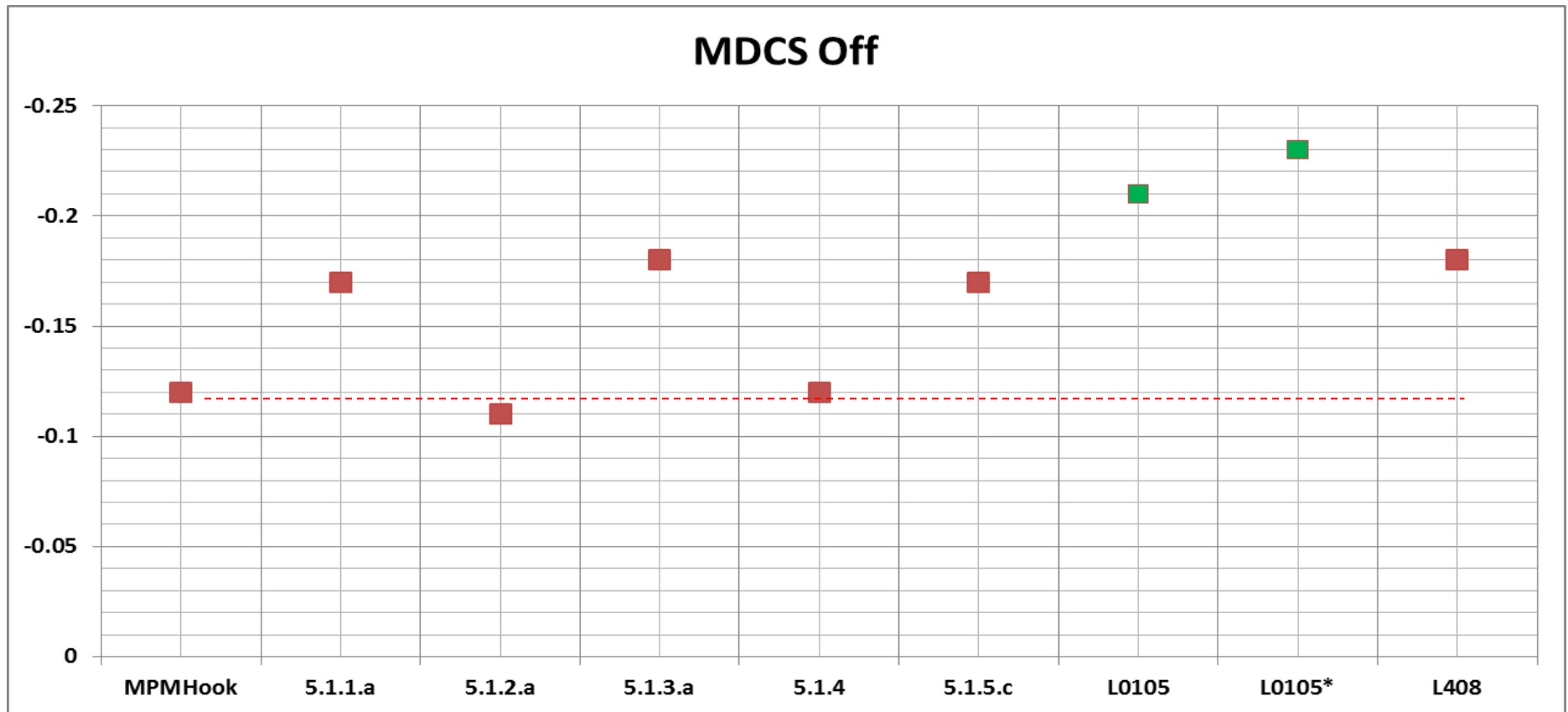
Proposal: L0105

Proposal with 5.1.1 tricks: L0105\*

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# Comparison with TE5.1 results



Proposal: L0105

Proposal with 5.1.1 tricks: L0105\*

- 5.1.1 tricks:
1. take BL mode colocated with center of EL CU
  2. replace IBL by BL mode in EL neighboring CUs
  3. if mode is IBL, scan is same as DC mode

# Conclusion

- Intra BL mode is often relevant for the corresponding EL CU
  - Modified MPM derivation with MPM0 set to BL mode when BL mode is Angular ( $>1$  &&  $<34$ )
  - Modified Coding Tree favoring more MPM0
- Performance:
  - 0.4% AI20, 0.2% AI15 when MDCS On
  - 0.3% AI20, 0.2% AI15 when MDCS Off
  - Performs better than solutions of TE5.1