

# JCTVC-I0175: Improved LM mode with template shift



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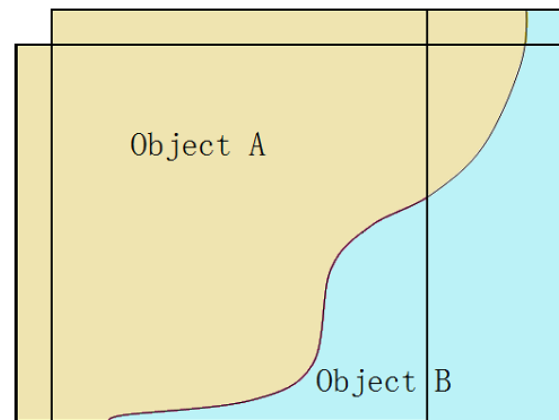
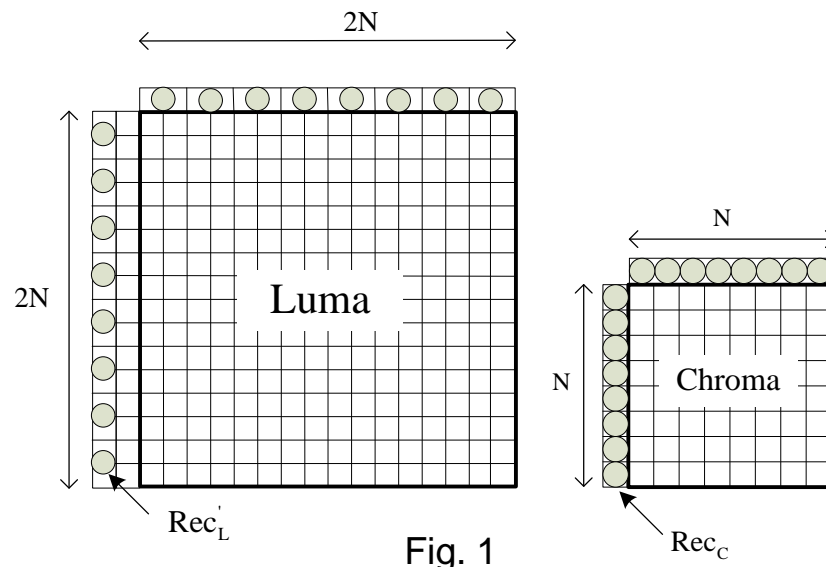
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# Background

- LM mode: Using a linear model to predict Chroma from Luma. Parameters are derived by  $2N$  neighboring samples.

$$Pred_C[x, y] = \alpha \cdot Rec_L'[x, y] + \beta$$

However, sometimes useful hints of the content in current block can be found in the outer border.





## Proposed Modification

In order to consider both the inner border and outer border, we propose to modify the L-shape template in LM mode with:

- a right shift distance  $Dx$  for top neighboring samples
- a down shift distance  $Dy$  for left neighboring samples

Four setting of  $Dx$  and  $Dy$  are tested:

Scheme 1:  $Dx=1$ ,  $Dy=1$ ;

Scheme 2:  $Dx=1$ ,  $Dy=0$ ;

Scheme 3:  $Dx=2$ ,  $Dy=0$ ;

Scheme 4:  $Dx=N/4$ ,  $Dy=0$ ;

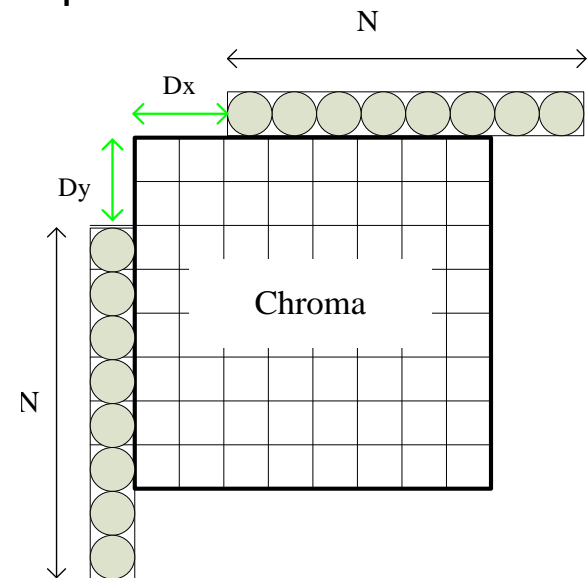


Fig. 3 LM mode with shifted template



## Simulation Results on HM6.0

Test (Class A-E)	Intra-Main + LMChroma=1			Intra-HE 10bit		
	Y BD-Rate (%)	U BD-Rate (%)	V BD-Rate (%)	Y BD-Rate (%)	U BD-Rate (%)	V BD-Rate (%)
<b>Scheme 1: Dx=1, Dy=1</b>	-0.02%	-0.27%	-0.26%	-0.03%	-0.24%	-0.17%
<b>Scheme 2: Dx=1, Dy=0</b>	-0.02%	-0.23%	-0.20%	-0.03%	-0.22%	-0.14%
<b>Scheme 3: Dx=2, Dy=0</b>	-0.02%	-0.22%	-0.15%	-0.02%	-0.20%	-0.10%
<b>Scheme 4: Dx=N/4, Dy=0</b>	-0.02%	-0.25%	-0.20%	-0.03%	-0.26%	-0.15%



Thank you