

# Sign context modelling and level mapping for TS residual coding (JVET-N0455)

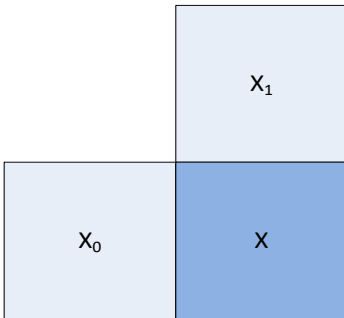
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# Introduction

- JVET-M0464 introduced TS residual coding
- Proposed methods on top of JVET-M0464
  - local neighbor-based context derivation for sign coding
  - level mapping scheme
  - bitplane coding for residual coding

# Proposal (part 1)

- Sign coding context modelling

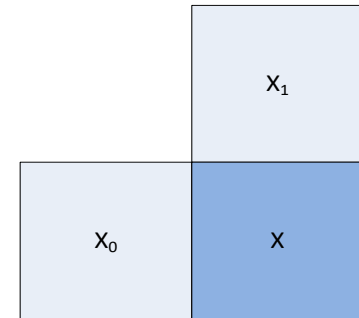


$(X_0, X_1)$	Context offset
$(0, 0), (+, -), (-, +)$	0
$(+, +), (+, 0), (0, +)$	1
$(-, -), (-, 0), (0, -)$	2

# Proposal (Part 2)

- Level mapping:  $absCoeffLevel \rightarrow absCoeffLevelMod$
- Predict level to be coded from top and left neighbors levels

```
pred = max (X0, X1)  
if ( absCoeffLevel == pred )  
{  
    absCoeffLevelMod = 1;  
}  
else  
{  
    absCoeffLevelMod = absCoeffLevel < pred ? absCoeffLevel + 1 : absCoeffLevel  
}
```



# Proposal (part 3)

- JVET-M0464 coding passes
  - Pass 1: interleaved  
*sig\_coeff\_flag, coeff\_sign\_flag, abs\_level\_gt1\_flag, par\_level\_flag*
  - Pass 2: bitplane by bitplane  
*abs\_level\_gt3\_flag, abs\_level\_gt5\_flag, ....*
  - Pass 3: remainder level for residuals  
*abs\_remainder*
- Convert all residual coding passes up to Pass 3 to bitplane coding  
*sig\_coeff\_flag, coeff\_sign\_flag, abs\_level\_gt1\_flag, abs\_level\_gt3, ..., par\_level\_flag*
- Contexts are unchanged

# Results (part 1,2)(VTM-4.0 anchor)

## Part 1 (sign)

		Y	U	V	EncT	DecT
AI	Class F	-3.27%	-1.91%	-2.08%	85%	97%
	Class SCC	-5.20%	-2.75%	-2.83%	108%	109%
RA	Class F	-2.37%	-1.46%	-1.47%	85%	102%
	Class SCC	-3.44%	-1.38%	-1.29%	112%	113%
LB	Class F	-1.94%	-1.54%	-1.84%	87%	103%
	Class SCC	-2.84%	-1.76%	-1.69%	112%	116%

CE8-4.4b

## Part 1+2 (sign+level)

		Y	U	V	EncT	DecT
AI	Class F	-3.92%	-2.49%	-2.65%	84%	94%
	Class SCC	-5.82%	-3.35%	-3.37%	113%	110%
RA	Class F	-2.83%	-1.98%	-1.83%	85%	99%
	Class SCC	-4.06%	-1.83%	-1.85%	112%	115%
LB	Class F	-2.22%	-1.54%	-1.60%	86%	100%
	Class SCC	-3.15%	-2.14%	-1.99%	114%	118%

CE8-4.4b

# Results (part 3 bitplane)(VTM-4.0 anchor)

		Y	U	V	EncT	DecT
AI	Class F	-2.60%	-1.34%	-1.46%	77%	85%
	Class SCC	-3.94%	-1.79%	-1.85%	106%	103%
RA	Class F	-1.78%	-1.02%	-0.88%	81%	95%
	Class SCC	-2.71%	-0.84%	-0.73%	104%	106%
LB	Class F	-1.46%	-0.83%	-0.73%	81%	93%
	Class SCC	-2.34%	-1.34%	-1.29%	107%	110%

CE8-4.4a

# Conclusion

- [illegible]