JCT3V-G0072 – CE4: Results on IC and ARP Flags Signaling

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IC and ARP Flags Signaling

❖ In current 3D-HEVC, IC and ARP flags are redundantly signaled

- IC and ARP are rarely performed simultaneously
- Signaling of these flags needs to be optimized

❖ To resolve this problem, there are two options

- **Option1**: Disabling IC when ARP is enabled
- **Option2**: Disabling ARP when IC is enabled
- With the proposed methods
  - Mode decision complexity can be reduced: 6 ➔ 4
  - Unnecessary signaling can be removed
- Need to choose an option which can have the best performance

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Simulation Results

❖ Based on CTC with HTM9.0r1

■ **Option 1**: Disabling IC when ARP is enabled

	video 0	video 1	video 2	video PSNR / video bitrate	video PSNR / total bitrate	synth PSNR / total bitrate	enc time	dec time	ren time
Balloons	0.00%	-0.25%	-0.25%	-0.13%	-0.13%	-0.12%	95.9%	87.6%	94.1%
Kendo	0.00%	-0.47%	-0.55%	-0.25%	-0.23%	-0.18%	97.2%	103.9%	100.4%
Newspaper_CC	0.00%	-0.10%	-0.01%	-0.04%	-0.04%	-0.02%	97.3%	107.3%	105.0%
GT_Fly	0.00%	0.00%	-0.02%	0.00%	0.00%	0.01%	99.6%	104.5%	97.1%
Poznan_Hall2	0.00%	-0.09%	-0.15%	-0.07%	-0.07%	0.04%	97.5%	90.1%	90.6%
Poznan_Street	0.00%	0.05%	-0.05%	-0.02%	-0.01%	-0.02%	97.5%	99.6%	100.5%
Undo_Dancer	0.00%	-0.01%	-0.06%	-0.01%	0.00%	-0.02%	96.7%	96.5%	99.4%
Shark	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	99.7%	102.0%	96.9%
1024x768	0.00%	-0.27%	-0.27%	-0.14%	-0.13%	-0.11%	96.8%	99.6%	99.9%
1920x1088	0.00%	-0.01%	-0.06%	-0.02%	-0.02%	0.00%	98.2%	98.5%	96.9%
average	**0.00%**	**-0.11%**	**-0.14%**	**-0.06%**	**-0.06%**	**-0.04%**	**97.7%**	**98.9%**	**98.0%**

➜ **0.06%, 0.04% bit-saving**
➜ **97.7% encoding time**

■ **Option 2**: Disabling ARP when IC is enabled

	video 0	video 1	video 2	video PSNR / video bitrate	video PSNR / total bitrate	synth PSNR / total bitrate	enc time	dec time	ren time
Balloons	0.00%	-0.23%	-0.31%	-0.11%	-0.10%	-0.10%	95.6%	88.4%	92.5%
Kendo	0.00%	-0.36%	-0.50%	-0.19%	-0.15%	-0.15%	97.7%	102.2%	101.7%
Newspaper_CC	0.00%	-0.06%	-0.03%	-0.03%	-0.04%	-0.04%	96.9%	98.6%	101.4%
GT_Fly	0.00%	0.00%	-0.01%	0.00%	0.00%	0.01%	99.7%	99.6%	97.9%
Poznan_Hall2	0.00%	-0.13%	-0.05%	-0.05%	-0.05%	0.07%	98.3%	97.2%	92.7%
Poznan_Street	0.00%	-0.03%	-0.04%	-0.01%	-0.02%	-0.02%	97.7%	102.2%	101.5%
Undo_Dancer	0.00%	0.04%	0.04%	0.01%	0.01%	0.03%	97.3%	100.4%	98.8%
Shark	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	99.7%	105.5%	97.6%
1024x768	0.00%	-0.22%	-0.28%	-0.11%	-0.10%	-0.10%	96.8%	96.4%	98.6%
1920x1088	0.00%	-0.02%	-0.01%	-0.01%	-0.01%	0.02%	98.5%	101.0%	97.7%
average	**0.00%**	**-0.10%**	**-0.11%**	**-0.05%**	**-0.04%**	**-0.03%**	**97.9%**	**99.3%**	**98.0%**

➜ **0.04%, 0.03% bit-saving**
➜ **97.9% encoding time**

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Conclusions

- ❖ We propose to improve IC and ARP flags signaling
  - ▪ Option 1 has slightly better performance than Option 2
    - • 0.1% bit-saving for coded views
    - • 97.7% encoding time

- ❖ We recommend to adopt the proposed method (Option 1) into next 3D-HEVC WD

Thanks LG for the cross checking (JCT3V-G0075).

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