H.264 means that only the previous frame is used as the referenced frame for the inter-coding with motion searching region set to zero, which is therefore similar to the differential pulse coding modulation (DPCM). Because DPCM exploits the temporal correlation between adjacent frames, zero-motion based H.264 normally outperforms the intra-frame coding in term of rate-distortion performance. With no motion estimation at the encoder, its encoding process is greatly simplified. Typically, in our experiments, the encoding time of zero-motion based H.264 inter-coding is always shorter than that of the intra-frame in H.264 JM 9.0 program.

3.2. Residual based encoding

In the single-description based DVC, it has been shown in [7] that the pixel-domain residual WZ coding achieves better rate-distortion performance than non-residual scheme. Here, we extend this idea to our two-description DVC to further improve the rate-distortion performance efficiently. In residual 2D-DVC encoding, SW-SPIHT encodes the difference $D = X - X_{re}$ to generate part 2, where $X_{re}$ is a simple estimation to $X$. In non-residual 2D-DVC encoding, $X$ is directly input to SW-SPIHT to produce part 2. Besides, it is $D_y = Y - X_{re}$ that acts as SI in the residual 2D-DVC, while $Y$ is SI in non-residual 2D-DVC. Residual scheme achieves better performance than