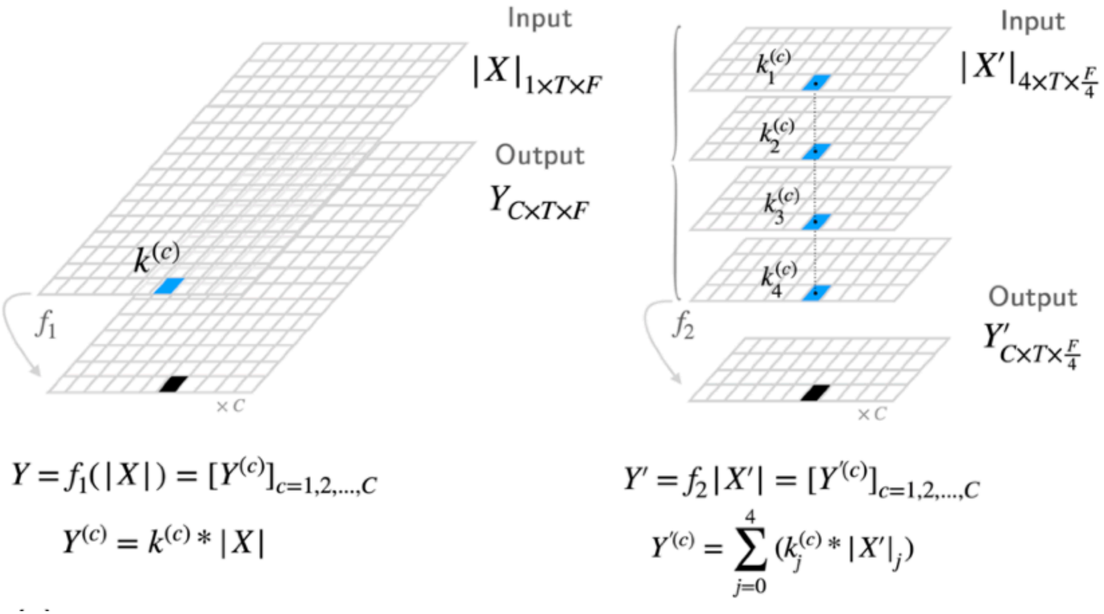
Motivations

Channel-wise subband feature

- Why channel-wise subband feature?
  - Reduce CNN kernel global sharing.
  - Larger receptive field.
  - Reduce computations (75%).



$$Y = f_1(|X|) = [Y^{(c)}]_{c=1,2,\ldots,C}$$

$$Y^{(c)} = k^{(c)} * |X|$$

$$Y' = f_2|X'| = [Y'^{(c)}]_{c=1,2,\ldots,C}$$

$$Y'^{(c)} = \sum_{j=0}^{4} (k_j^{(c)} * |X'|_j)$$

CWS-PResUNet

Step1: Subband analysis

- Input
  - Stereo mixture signal: $x \in \mathbb{R}^{2\times L}$
  - Analysis filter banks: $h^{(j)}, j = 1,2,3,4$
- Operation
  - $x'_{8\times\frac{L}{4}} = [\mathrm{DS}_4(x_{2\times1\times L} * h^{(j)}_{1\times64})]_{j=1,2,3,4}$