Primary Passarino–Veltman reduction formule
(for B functions)

① $$p\cdot p\, B_{\underbrace{0\cdots0}_{2r}\underbrace{1\cdots1}_{n+1}} + n\, B_{\underbrace{0\cdots0}_{2r+2}\underbrace{1\cdots1}_{n-1}}$$

$$= \frac{1}{2}\left[\delta_{n,0}\, A_{\underbrace{0\cdots0}_{2r}}(\hat{D}_1) - A_{\underbrace{0\cdots0}_{2r}\underbrace{1\cdots1}_{n}}(\hat{D}_0) - f\, B_{\underbrace{0\cdots0}_{2r}\underbrace{1\cdots1}_{n}}\right]$$

② $$p^2\, B_{\underbrace{0\cdots0}_{2r}\underbrace{1\cdots1}_{n+2}} + (d+2(r+n))\, B_{\underbrace{0\cdots0}_{2r+2}\underbrace{1\cdots1}_{n}}$$

$$= A_{\underbrace{0\cdots0}_{2r}\underbrace{1\cdots1}_{n}}(\hat{D}_0) + m_0^2\, B_{\underbrace{0\cdots0}_{2r}\underbrace{1\cdots1}_{n_1}}$$

Recall, $$A_{\underbrace{0\cdots0}_{2r}\underbrace{1\cdots1}_{n}}(\hat{D}_0) = (-1)^n A_{\underbrace{0\cdots0}_{2r}}(m_1)$$

<u>In matrix form:</u>

$$\underbrace{\begin{pmatrix} 2m_0^2 & f \\ f & 2p^2 \end{pmatrix}}_{X} \begin{pmatrix} B_{\underbrace{0\cdots0}_{2r}\underbrace{1\cdots1}_{n}} \\ B_{\underbrace{0\cdots0}_{2r}\underbrace{1\cdots1}_{n+1}} \end{pmatrix} = \begin{pmatrix} 2(d+2r+n-1)\, B_{\underbrace{0\cdots0}_{2r+2}\underbrace{1\cdots1}_{n}} - A_{\underbrace{0\cdots0}_{2r}\underbrace{1\cdots1}_{n}}(\hat{D}_0) \\ \delta_{n,0}\, A_{\underbrace{0\cdots0}_{2r}}(\hat{D}_1) - A_{\underbrace{0\cdots0}_{2r}\underbrace{1\cdots1}_{n}}(\hat{D}_0) - 2n\, B_{\underbrace{0\cdots0}_{2r+2}\underbrace{1\cdots1}_{n-1}} \end{pmatrix}$$

$$\det X = -\lambda(p^2, m_0^2, m_1)$$

$$f = p^2 - m_1^2 + m_0^2$$