DiscB function

$$\Lambda(p^2; m_0, m_1) := \frac{\lambda(p^2; m_0^2, m_1^2)}{2p^2}\int_0^1 dz \, \frac{1}{p^2 z^2 + z(-p^2+m_1^2-m_0^2)+m_0^2 - i\epsilon}$$

$$= \frac{\sqrt{\lambda(p^2; m_0^2, m_1^2)}}{p^2} \ln\left(\frac{-p^2+m_0^2+m_1^2+\sqrt{\lambda(p^2; m_0^2, m_1^2)}}{2m_0 m_1} + i\epsilon\right) = \Lambda(p^2; m_1, m_0)$$

[symmetric]

Simple cases:

$$\Lambda(p^2; m, m) = \frac{\sqrt{p^2(p^2-4m^2)}}{p^2} \ln\left(\frac{-p^2+2m^2+\sqrt{p^2(p^2-4m^2)}}{2m^2}\right)$$

$$\Lambda(0; m, m) = -2$$

$$\Lambda((m_0 \pm m_1)^2; m_0, m_1) = 0$$

Derivatives:

$$\frac{\partial \Lambda}{\partial p^2} = \frac{-1}{p^2} - \left(\frac{1}{p^2} + \frac{-p^2+m_0^2+m_1^2}{\lambda(p^2, m_0^2, m_1^2)}\right)\Lambda(p^2; m_0, m_1)$$

$$\frac{\partial \Lambda}{\partial m_0} = \frac{-2m_0(p^2+m_1^2-m_0^2)}{\lambda(p^2, m_0^2, m_1^2)}\Lambda(p^2; m_0, m_1) + \frac{p^2+m_0^2-m_1^2}{m_0 p^2}$$

$$\frac{\partial \Lambda}{\partial m_1} = \frac{-2m_1(p^2+m_0^2-m_1^2)}{\lambda(p^2, m_0^2, m_1^2)}\Lambda(p^2; m_0, m_1) + \frac{p^2+m_1^2-m_0^2}{m_1 p^2}$$

Singularities:

$p^2 = 0$ [Non-Landavian]

$p^2 = (m_0 \pm m_1)^2$ [Normal/Pseudo-threshold]

$p^2 = \infty$

$\left.\begin{array}{l} m_0 = 0 \\ m_1 = 0 \end{array}\right\}$ [Tadpole-subleading]