with

$$\overline{X} = \frac{m_Z^2}{\bar{M}^2}\left(\frac{g}{\bar{g}_5}\right)^2. \tag{72}$$

Note that $\epsilon_{1,2,3}$ are all proportional to $\overline{X}$ which contains a double suppression factor. This feature was the main ingredient for the compatibility of the D-BESS model with the EW precision tests. In the five dimensional formulation of this model the ratio $(g/\bar{g}_5)^2$ originates from the presence of brane localized kinetic terms.

The ϵ parameters can be tested against the experimental data. To do this, we need to express the model parameters in terms of the physical quantities. Proceeding again as in [60] we get the expressions the standard input parameters α, G_F and m_Z in terms of the model parameters. For convenience we rewrite the results:

$$\alpha \equiv \frac{e^2}{4\pi} = \frac{g^2 s_\theta^2}{4\pi}, \tag{73}$$

$$m_Z^2 = \tilde{M}_Z^2\left(1 - z_Z\frac{\tilde{M}_Z^2}{\bar{M}^2}\right), \quad m_W^2 = \tilde{M}_W^2\left(1 - z_W\frac{\tilde{M}_W^2}{\bar{M}^2}\right), \tag{74}$$

$$\frac{G_F}{\sqrt{2}} \equiv \frac{e^2}{8 s_{\theta_0}^2 c_{\theta_0}^2 m_Z^2}, \qquad s_{\theta_0}^2 c_{\theta_0}^2 = s_\theta^2 c_\theta^2\left(1 + z_Z\frac{m_Z^2}{\bar{M}^2}\right), \tag{75}$$

with

$$z_Z = \frac{g^2(c_\theta^4 + s_\theta^4)}{c_\theta^2\,\bar{g}_5^2}, \qquad \tilde{M}_Z^2 = \frac{v^2(g^2 + g'^2)}{4} \tag{76}$$

$$z_W = \frac{g^2}{\bar{g}_5^2}, \qquad \tilde{M}_W^2 = \frac{v^2 g^2}{4} \tag{77}$$

In section VI, we will study the constraints on the model parameter space by EW precision parameter for two choices of the warp factor, $b(y) \equiv 1$ (flat extra dimension) and $b(y) = e^{-2ky}$ (a slice of AdS$_5$). To this aim we need to invert (73), (74) and (75),

$$g^2 = \frac{4\pi\alpha}{s_{\theta_0}^2}\left(1 + \frac{4\pi\alpha(c_{\theta_0}^4 + s_{\theta_0}^4)}{\bar{g}_5^2 s_{\theta_0}^2 c_{2\theta_0}}\frac{m_Z^2}{\bar{M}^2}\right), \tag{78}$$

$$g'^2 = \frac{4\pi\alpha}{c_{\theta_0}^2}\left(1 - \frac{4\pi\alpha(c_{\theta_0}^4 + s_{\theta_0}^4)}{\bar{g}_5^2 c_{\theta_0}^2 c_{2\theta_0}}\frac{m_Z^2}{\bar{M}^2}\right), \tag{79}$$

$$v^2 = \frac{4}{g^2 + g'^2} m_Z^2\left(1 + \frac{4\pi\alpha(c_{\theta_0}^4 + s_{\theta_0}^4)}{\bar{g}_5^2 s_{\theta_0}^2 c_{\theta_0}^2}\frac{m_Z^2}{\bar{M}^2}\right) = \frac{1}{\sqrt{2}G_F}; \tag{80}$$

then, using definitions (65), obtain also $\tilde{g}$ and $\tilde{g}'$.