$$\varphi_\alpha = (L)^{-\left(\frac{D}{2}+1\right)} N \phi_\alpha$$

$$\int d^D z \sqrt{|g|}\, \phi_\alpha \phi_\beta = \delta_{\alpha\beta} \qquad (36)$$

N: second spontaneous parameter besides R.

Eq. (36) implies

$$S_{eff}^{(W)} = -\frac{1}{4 g_{ch}^2} \int d^4x \left(W_{\mu\nu}^f W^{\mu\nu f} \right)$$

$$(g_{ch})^{-2} = \frac{N^2 \cdot C^{(2)}(\varphi) \cdot D}{2\delta} \qquad (37)$$

In eq. (36) g_{ch} denotes the coupling constant of the charge like gauge group G. $C^{(2)}(\varphi)$ is the value of the quadratic Casimir operator for the representation of G formed by φ_α.

Shifting the fields φ_α, g_{AB} by the above solution in the ground state

$$\varphi_\alpha \longrightarrow \tilde{\varphi}_\alpha = \varphi_\alpha + \hat{\varphi}_\alpha \; ; \; g_{AB} \longrightarrow \tilde{g}_{AB} = g_{AB} + \hat{g}_{AB} \qquad (38)$$

with φ_α and g_{AB} denoting the ground state field configuration, we observe that R generates a mass term (in four dimensions) for the scalars $\hat{\varphi}_\alpha$ (with $\partial_{z'} \hat{\varphi}_\alpha = 0$

$$m(\hat{\varphi}_\alpha) = \frac{\sqrt{Q}}{L} \qquad (39)$$

Finally Newton's constant is given by

$$(16\pi G_N)^{-1} = \int d^D z \sqrt{|g|}\, Q(\varphi) = \frac{N^2 Q}{2L^2} \qquad (40)$$

$$\kappa = 8\pi G_N = \frac{L^2}{N^2 Q} \; ; \; \kappa\, m^2(\hat{\varphi}_\alpha) = \frac{1}{N^2}$$