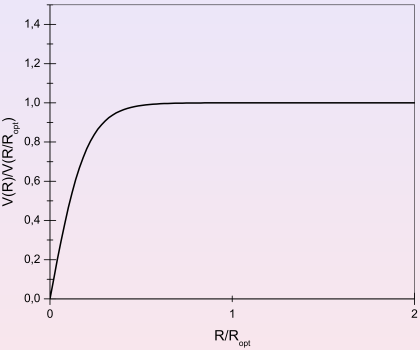
$v(r)$

$$v^2(r) \propto G_N \frac{M(r)}{r}$$



1,4
1,2
1,0
0,8
0,6
0,4
0,2
0,0
V(R)/V(R/R$_{opt}$)
0
1
2
R/R$_{opt}$

v^2

$$\partial_\nu F^{A\mu\nu} = 0.$$

$$F^B_{\mu\nu} = \partial_\mu \mathcal{A}^B_\nu - \partial_\nu \mathcal{A}^B_\mu + g f^{BCD} \mathcal{A}^C_\mu \mathcal{A}^D_\nu A^B_\mu$$

$$
\begin{aligned}
A_0^2 &= -2\frac{z}{gr^2}\chi(r), \\
A_0^5 &= 2\frac{y}{gr^2}\chi(r), \\
A_0^7 &= -2\frac{x}{gr^2}\chi(r), \\
A_i^2 &= 2\frac{\epsilon_{3ij}x^j}{gr^2}\left[h(r)+1\right], \\
A_i^5 &= -2\frac{\epsilon_{2ij}x^j}{gr^2}\left[h(r)+1\right], \\
A_i^7 &= 2\frac{\epsilon_{1ij}x^j}{gr^2}\left[h(r)+1\right]
\end{aligned}
$$

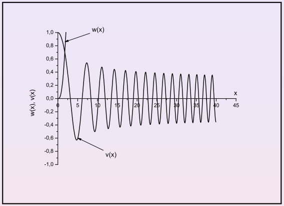
$A_\mu^{2,5,7} \in SU(2) \subset SU(3)$

$SU(3)/SU(2)$

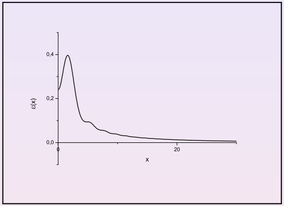
$$
\begin{aligned}
(A_0)_{\alpha,\beta} &= 2\left(\frac{x^\alpha x^\beta}{r^2} - \frac{1}{3}\delta^{\alpha\beta}\right)\frac{w(r)}{gr}, \\
(A_i)_{\alpha\beta} &= 2\left(\epsilon_{is\alpha}x^\beta + \epsilon_{is\beta}x^\alpha\right)\frac{x^s}{gr^3}v(r),
\end{aligned}
$$

$$
\begin{aligned}
x^2 w'' &= 6wv^2, \\
x^2 v'' &= v^3 - v - vw^2, \\
\chi(r) &= h(r) = 0
\end{aligned}
$$

$v(x) w(x)$



$w(x), v(x) v_2' = -0.2 w_3' = 1$



$\varepsilon(x)$

$\epsilon(x)$

$$\epsilon(r) = -F^a_{0i} F^{a0i} + \frac{1}{4} F^a_{ij} F^{aij} = \frac{1}{g^2 r_0^4} \varepsilon(x).$$

$$\varepsilon_{\infty}(x) \approx \alpha \frac{r_0^4}{r^4} \left(\frac{r}{r_0} \right)^{2\alpha} .$$

$$\left[\frac{V_{URC}\left(\frac{r}{R_{opt}}\right)}{V(R_{opt})}\right]^2 =$$

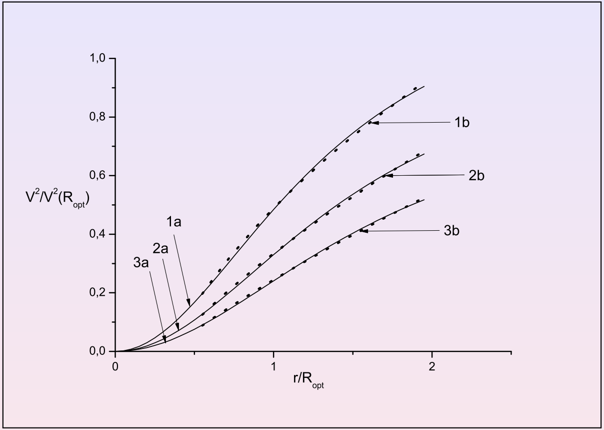
$$\left(0.72 + 0.44 \log \frac{L}{L_*}\right) \frac{1.97 X^{1.22}}{(X^2 + 0.78^2)^{1.43}} +$$

$$1.6\, e^{-0.4(L/L_*)} \frac{X^2}{X^2 + 1.5^2 \left(\frac{L}{L_*}\right)^{0.4}} =$$

$$V_{LM}^2 + V_{DM}^2,$$ [22]

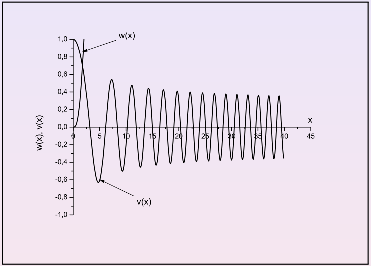
$$
\begin{aligned}
V^2(r) &= G_N \frac{\mathcal{M}(r)}{r} \approx \\
& C(r_0, V_0, \alpha, L/L_*) \left(\frac{r}{r_0}\right)^{2\alpha-2} - V_0^2 .\\
\mathcal{M} &= 4\pi \int_0^\infty \epsilon(r) r^2 dr
\end{aligned}
$$

$\mathcal{M}(r) A_\mu^B r$



$r_0, V_0, \alpha, LŁ_0$

$$\varepsilon_\infty(x) \approx \alpha \frac{r_0^4}{r^4} \left(\frac{r}{r_0} \right)^{2\alpha} .$$



$$w(x), v(x) v_2' = -0.2 w_3' = 1$$

$$\frac{1}{c}\,\Delta F^a_{ti}\,\Delta A^{ai}\,\Delta V \approx \hbar$$

$$\Delta \tilde{F}^2_{t\theta} \approx \frac{1}{g}\frac{1}{r^2}\left(\Delta v\; w + v\;\Delta w\right).$$

$\Delta\tilde{A}^2_\theta \tilde{A}^2_\theta \tilde{A}^1_\theta$

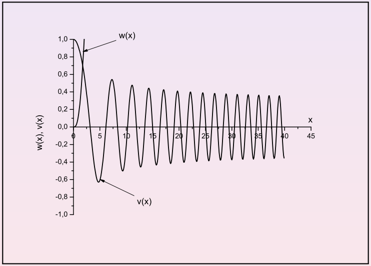
$$\Delta\tilde{A}^2_\theta \approx \Delta\tilde{A}^1_\theta \approx \frac{1}{g}\frac{\Delta v}{r}.$$

ΔV

$$\Delta V = 4\pi r^2 \Delta r.$$

$$\Delta V = 4\pi r^2 \Delta r$$

$$\frac{\Delta r}{r_0} \approx \lambda \approx \frac{1}{\alpha} \frac{2\pi}{x^{\alpha-1}}$$



$$w(x), v(x) v_2' = -0.2 w_3' = 1$$

$$\Delta v \approx v, \Delta w \approx w$$

$$\left(\frac{g'}{A}\right)^2 \approx 2\pi$$

$\frac{1}{g'^2} = \frac{4\pi}{g^2\hbar c} 1/g' \approx 1A \approx 0.4$

$$\left(\frac{g'}{A}\right)^2 \approx 6.25$$

$2\pi \approx 6.28$