# Résumé

$$S = \int d^2x[\frac{1}{2}(\frac{\partial\psi}{\partial x})^2 + \frac{1}{2}(\frac{\partial\phi}{\partial x})^2 - V(\phi,\psi)]$$

$$\text{Solution statique:}(\psi_o, \phi_o)$$

$$\text{Solution déformée:}(\psi_o, \xi(t)(\phi_o(x)+1)-1)$$

$$S = \int d^2x[\frac{1}{2}\dot{\xi}^2(\phi_o(x)+1)^2 - \left(\frac{1}{2}\xi^2\phi_o'^2 + \frac{1}{2}\psi_o'^2 + V(\phi_o,\psi_o,\xi(t))\right)]$$

$$= \int dt \left[\frac{1}{2}\dot{\xi}^2 \underbrace{\int dx(\phi_o(x)+1)^2}_{M} - \underbrace{\left(\xi^2\int dx\phi_o'^2 + \int dx\psi_o'^2 + \int dx V(\phi_o,\psi_o,\xi(t))\right)}_{U(\xi)}\right]$$

$$S = \int dt[\frac{1}{2}M\dot{\xi}^2 - U(\xi)]$$

par Euler-Lagrange:

$$\begin{aligned}
\frac{1}{2}M\dot{\xi}^2 &= U \\
F(\xi) \equiv \dot{\xi} &= \sqrt{2U(\xi)/M} \\
S_E &= \int dt[M\dot{\xi}^2] \\
&= \int dt[MF(\xi)\dot{\xi}] \\
&= \int_1^{\xi_o} \mathrm{d}\xi[\sqrt{2M}\hat{F}(\xi)]
\end{aligned}$$

$$\hat{F} = \sqrt{\xi^2\int dx\phi_o'^2 + \int dx\psi_o'^2 + \int dx V(\phi_o,\psi_o,\xi(t))}$$

$$V(\phi,\psi) = (\psi^2-\delta_1)(\psi^2-1)^2 + \frac{\alpha}{\psi^2+\gamma}\left[(\phi^2-1)^2 - \frac{\delta_2}{4}(\phi-2)(\phi+1)^2\right]$$

$$f \equiv \xi(\phi_o+1)$$

$$V(f,\psi_o) = (\psi^2-\delta_1)(\psi^2-1)^2 + \frac{\alpha}{\psi^2+\gamma}\left[(f^2-2f)^2 - \frac{\delta_2}{4}(f-3)f^2\right]$$

$$\int dx V(\phi_o,\psi_o,\xi(t)) = \int dx[\psi^2-\delta_1)(\psi^2-1)^2] \ + \alpha\xi^2\,[\xi^2\int dx[\frac{(\phi_o+1)^4}{\psi_o^2+\gamma}] \ - \xi(4+\frac{\delta_2}{4})\int dx[$$

$$+ (4+\frac{3\delta_2}{4})\int dx[\frac{(\phi_o+1)^2}{\psi_o^2+\gamma}]$$