

BIFURCATIVE SYMMETRY BREAKING

Dimensionality as the manifestation of the Principle of Least Action in an entropic / neg-entropic scenario

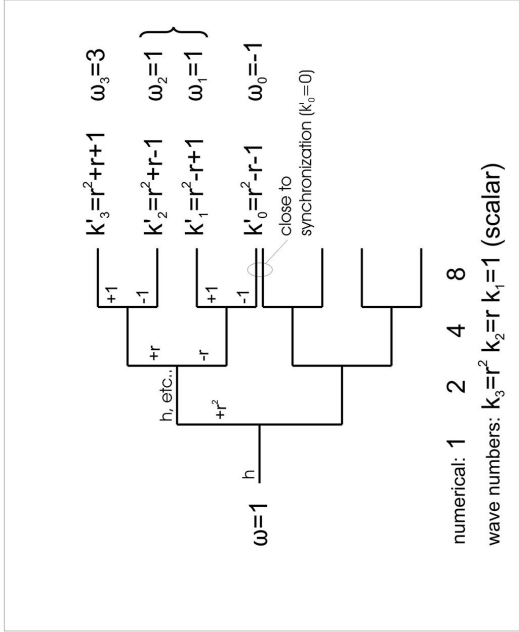
VERSION 13-12-2019

subwaves: $\phi_n = r_n k_0 e^{i(kx + wt)}$

scalar field self-interaction: $\phi = \prod \phi_n$

bifurcation: $f(\phi) = \int \phi(x) e^{-2\pi i x} dx$

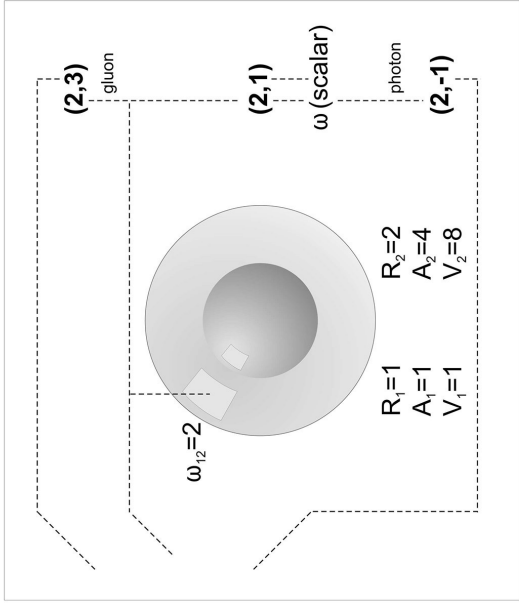
main field equations



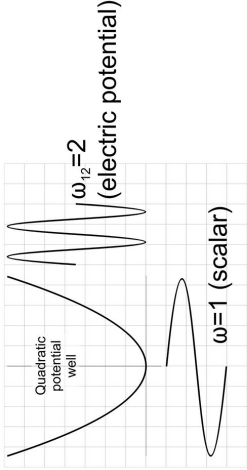
bifurcation
(unitary bifurcative self-interaction)

synchronization: $K'_3 = \phi^2 + \phi + 1 = 2 \phi^2$
 $r = \Phi = 1.618 (\phi)$
 $K'_2 = \phi^2 + \phi - 1 = 2 \phi$
 $K'_1 = \phi^2 - \phi + 1 = 2$
Volumetric: $K'_0 = \phi^2 - \phi - 1 = 0$
 $K'_1 K'_2 K'_3 = 8x(k_1 k_2 k_3)$

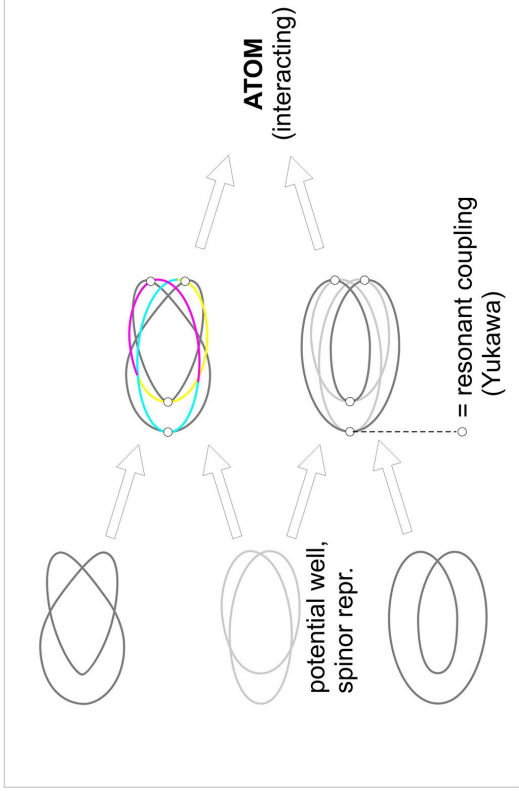
synchronized bifurcation
(creating zero-coefficient)



spherical or dimensional potential well
(if self-interaction is synchronized)



functional potential well
 $\sin^2(x) \sim \sin(2x)$



integral QCD + electron Dirac spinors

BIFURCATIVE SYMMETRY BREAKING is an interpretation of scalar field theory whereby the free field readily implies a non-linear or self-interaction. Therefore there is no added (quartic) interaction.

The non-uniqueness of the groundstate is realised in the form of a unitary transformation adjusting the linear and non-linear components.

When the self-interaction is synchronized, a quadratic potential well is implied, and the action becomes effectively neg-entropic. The Fourier series in this case has a zero-term, projecting an infinite phase wave.

It's spherical or dimensional form is entirely axiomatic, and is associated with the monoptical viewpoint of a biological (or equivalent) observer. The (ulterior) confined and deconfined states are considered only different in theory.

The double potential well in the standard theorem is effectively a (1,2) torus representation of the quadratic potential well in the bifurcation theorem. In the bifurcation theorem the potential well is a (2,1) torus.

In the dimensional form, the potential well as well as the linear components are represented through toruses resp. spinors, constituting the QCD and electromagnetic particles and interactions.

Because of the resonant coupling, the confined state has a default or lower mass bound.