

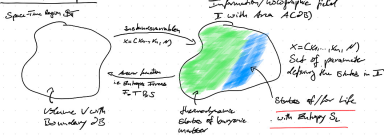
Summary: Modification of the Holographic Principle by the Consideration of the States of Life as an additional Entropy Term to Gravity yielding Dark Matter characteristics.

- Existence of an information/holographic field I on the boundary of a Volume V in Space-Time Region ST .
- Similar to the Holographic Principle, the number of states within I is limited by the area of boundary of Volume V .
- The states in I describe all of the possible volumes in ST .

□ Modifications to the Holographic Principle

- by emergence of life, the possible interactions of life with itself and with the environment have to be considered as states in the information/holographic field I .
→ These additional states in I yield an additional entropy S_L for the presence of life within the volume V in the space-time region ST .
- by interaction of life with itself and with the environment, the states of I can be changed, eg. for normal matter or for life.
- Examples for interaction between life and environment changing the states in I :
 - double slit experiment
 - measurement of entangled photons over large distances.
- Examples for interaction between life itself changing the states in I :
 - mass panic situations (flaw life behavior)
 - Game theory
 - form of different Governments
 - Music
 - Religion

Sketch of Principle:



Definition of the Entropy Force by the extended description of the Holographic Principle:

$$F = T \partial_r S \quad \text{whereas } S = \# \text{ States in } I$$

$x = (x_1, \dots, x_n, t)$ with x_1, \dots, x_n Variables to describe states for baryonic matter i.e. Holographic states.

$$V = (d, h, r, \dots)^T$$

and $N = N(PFR) = \#$ number of habitable planets in Volume V

- i) If $N=0 \Rightarrow F = T \partial_r S$ with $V = (d, h, \dots, r)^T$
→ Entropic force described by Newtonian Law of Gravity
- ii) If $PFR \neq 0$, whereas $PFR \equiv$ Planet Formation Rate of habitable planets
→ $F = T \partial_r S$ with $V = (d, h, \dots, r, \frac{PFR}{N})^T$
 Newtonian entropic force
 additional entropic force, which adds up to the gravity field as Dark Matter!