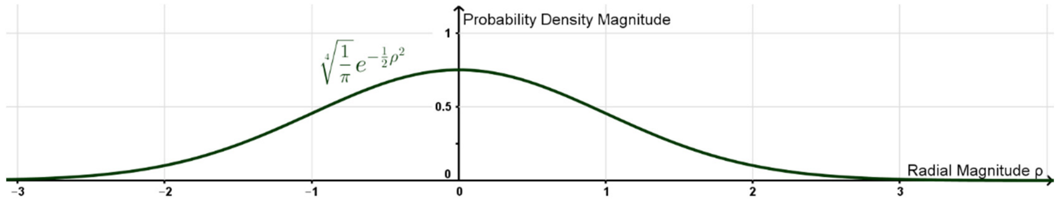

Figure 3.3 The graph for ground state $|0,0\rangle_0$, with the 'highest' fundamental symmetry around an arbitrary centre. The even function expresses the symmetry of 'something' around a specific centre. It is called Normal Distribution The missing or outstanding issue here is the scaling of the Radial Magnitude Coordinate $\rho \in \mathbb{R}$. Its unit is the pure number $1 \in \mathbb{R}$ without any kind of ***quality*** but that to stay constant in eternity.

The arbitrary ground state has a starting point at the center of the circle plane. The lack here is: We do not know the ***quality*** of what the radial coordinate represent before something happens or is created. The unit for the coordinate ***quantity*** $\rho=1 \in \mathbb{R}$ cannot be specified. Neither can any ***direction*** of a plane for any virtual rotation be known as any concept of intuition. The implication of the distribution for a ground state indicate the concept of continuity of physics by interpreting it as a smooth distribution around a center.
The ground state of the rotating circle oscillator expresses the *highest symmetry* [91] for the plane concept:

- All ***directions*** of the plane are valid.
- All points of the plane are equal, there are all virtual centers for the ground state.[92]
- All angles θ are legitimate and indefinite, $\odot$.
- 'Res extensa'? the radial coordinate $\rho \in \mathbb{R}$ from a center is a priori an unspecified scalar.

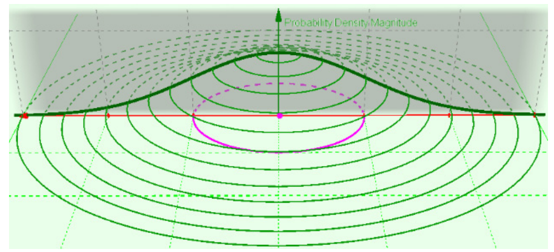

Figure 3.4 The plane-symmetrical ground state. The vertical axis is the probability density of locality. The radial coordinate ρ is an unspecified real scalar. The ground state $|0,0\rangle = \frac{1}{\sqrt[4]{\pi}}e^{-\frac{1}{2}\rho^2}e^{i\theta} \in \mathbb{C}$ is a complex number as the locality density magnitude $\mathrm{pdm}_0(\rho)\odot$. This is the legendary Normal Distribution in a plane.

This symmetry is the ground state symmetry.
In this way the rotation factor $\odot \sim e^{i\theta}$ make the ground state rotation invariant through its plane as shown in Figure 3.4.
I call $|0,0\rangle$ for the *plane ground state!*
This intuition view of the ground state plane of symmetry is bonded to the plane as the object for us and represent a subject in physics.
The ***direction*** of a plane is indifferent to the ground state. The ground state ***quality*** is therefore independent of the number of dimensions. The scalar field of the ground state is real probability of an a priori possibility of a *locus situs*[93] as a principle, in accordance with (3.44) $\frac{1}{\sqrt[4]{\pi}}e^{-\frac{1}{2}\rho^2} \in \mathbb{R}$,
This probability is of course, without any ***direction***, not even away[94] from the plane.
The input argument $\rho \in \mathbb{R}$ is an abstract stochastic radial ***quantity*** without external relation or any specific ***direction***. Although it in a classical interpretation seems one-dimensional, I will here

[91] The *highest symmetry* has purely been attributed to the concept of God by people since Thomas Aquinas (1225-74).
–In all cases, this symmetry is the highest number of possible degrees of freedom of a plane concept. We might be tempted to call it the symmetry with the lowest number of bonds, or simply the ground symmetry of the plane concept, as this:
The idea of a plane is linked to the ground state, which only can annihilate to nothingness $a_\pm|0,0\rangle = 0$, (void).
My synthetic claim is: In the void of nothingness, the plane concept idea has no existence for us! (kein Ding für uns).

[92] The ground state is a noumenon (Platonic) idea of a *locus situs* (place for a situation) from which a central radial distribution erupts or emerge, with any number of dimensions. See also the ground state of the linear harmonic oscillator 3.1.6. Note here that the idea of the ground state is Descartes "res cogitans" (noumenon) concerning the opportunity of "res extensa" (phenomenon).

[93] The word *situs* was used by Leibniz for *analysis situs*. And here for a geometrical locality, I use *locus situs*.

[94] Probability is not a geometric dimension in natural space! Even it looks like that in Figure 3.4 as a vertical graphic display.

condemn any specific ***direction***, by claiming $\rho \notin \mathbb{R}^1$ and further $\rho \notin \mathbb{R}^N$, but only an omni-radial magnitude scalar field $\rho \in \mathbb{R}$. Also, the probability magnitude $\frac{1}{\sqrt[4]{\pi}}e^{-\frac{1}{2}\rho^2} \in \mathbb{R}$ is a magnitude scalar.

My a priori judgment is, that the ground state is isotropic in all dimensions.[95]
As we with the plane as two dimensional we have the circular symmetry $S^1 \sim \odot \sim e^{i\theta}$ represented by the unitary rotation group $U(1)$, – In three-dimensions we have spherical S^2 symmetry, - etc. in higher dimensions for the ground state.
Her we continue to base our examination on the plane concept and its rotational symmetry.
We distinguish between:

- the eternal constant angle θ representing all angles $\forall\theta \in [0,2\pi[$ in the plane, and
- the variable changeable angle $\phi \in \mathbb{R}$ in that same plane,

both represented by the polar coordinates (ρ,θ), respectively[96] (ρ,ϕ).
An information development parameter t can describe the variable phase angle $\phi = \omega t$, when some change happens introduced by some given ***quantity*** ω (as angular frequency energy).
The eternal symmetry of the ground state can be expressed as

$$\frac{\partial\theta}{\partial\phi} = 0, \quad \text{or traditional as} \quad \frac{\partial\theta}{\partial t} = 0. \qquad \theta \text{ is eternal, and } \phi=\omega t \text{ is changing,} \quad \frac{\partial\phi}{\partial t} = \omega. \tag{3.139}$$

The ground state symmetry can be broken by excitations of the virtual plane of rotation.

The higher excited states resulting from the use of (3.107)

$$|n_+n_-\rangle = \frac{1}{\sqrt{n_+!}}\frac{1}{\sqrt{n_-!}}\left(a_+^\dagger\right)^{n_+}\left(a_-^\dagger\right)^{n_-}|0,0\rangle \tag{3.140}$$

[95] Every time we invent by our intuition a new independent plane representing a new dimension j=1,2, ... N, we will multiply by a factor of rotational symmetry $e^{i_j\theta_j}$ of each plane γ_j. As we understand later, the complex imaginary unit $\boldsymbol{i}_j$ has in principle to be independent for each new ***directional*** independent dimension j.
Therefore, the combined ground state of all N planes is $\frac{1}{\sqrt[4]{\pi}}e^{-\frac{1}{2}\rho^2}\prod_{j=1}^{N} e^{i_j\theta_j}$.
Hey, the plane is traditionally two-dimensional; then we get a double representation of the idea of N linear dimensions.
Anyway, the ground state is S^N spherical symmetrical in N plane dimensions, where $S^1 \sim \odot \sim e^{i\theta}$.

[96] This division is known through the history of philosophy and was first distinctive by Thomas Aquinas & Co.:
The essential (essentia) that is 'Eternal' versus existence (esse) that is 'Change'.