Nothing is unstable?

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A note on the instability of nothing.

Asking about how the universe can be created from nothing [1] is a bit like asking how a stationary fluid can begin moving without any external force being applied. Let \( u = u(x, t) \), \( p(x, t) \), and \( f(x, t) \) be the fluid velocity, fluid pressure, and given external force, each defined for position \( x \) and time \( t \). The fluid is incompressible with viscosity \( \nu \geq 0 \). The Navier–Stokes equations are then given by

\[
\frac{\partial u}{\partial t} + (u \cdot \nabla)u = \nu \nabla^2 u - \nabla p + f, \tag{1}
\]

\[
\nabla \cdot u = 0. \tag{2}
\]

Let

\[
f = 0 \quad \text{and} \quad u|_{t=0} = 0. \tag{3}
\]

Then taking the divergence of (1) at \( t = 0 \) yields

\[
\nabla^2 p|_{t=0} = 0. \tag{4}
\]

If we do not specify any boundary conditions in particular, any solution of the Laplace equation is a valid solution for \( p|_{t=0} \). It then follows that it is possible for

\[
\frac{\partial u}{\partial t}|_{t=0} \neq 0 \tag{5}
\]

and therefore a stationary fluid can begin to move without any external forcing. It is postulated that any object has atoms that move, so zero velocity of an atom implies that it is a nonexisting atom. An analogous calculation may then prove that the universe can be created from nothing in that a state of nothing is unstable. We know that gravity is the attractive force between two masses. It has long been a question of why does gravity occur? I propose that it occurs as a consequence of the fact that the state of nothing is unstable.

Reference