



# **DUALITY OF TRUTH**

**AYUSH GUPTA**

# *Duality of Truth*

—Ayush Gupta (17-06-2025)

One day on a random morning when the electrical power supply was cut due to storm, I observed something peculiar. The two windows that had metallic mesh (used commonly in Indian windows to get air without allowing insects to come inside) were overlapped onto each other. So, when we see it from some distance then we see constantly changing wave like patterns on the Net.



It's mainly a visual illusion due to the small mesh holes. The two perpendicular wire orientations in the mesh act like overlapping periodic spatial filters (interference between the visual information from both meshes). When slightly misaligned or viewed from a distance, their interference produces “Moiré patterns” emerging purely from spatial geometry.

But the wonderful thing is not this but the thought that "when we see it from afar it looks like waves, then we come closer and see that it's a damn particle", in this simple experiment first we observe the mesh from far away so its wave like, but then we change the viewing distance and this changing also changes the “kind of experiment” we are performing and now it's a particle, it's kind of like electron's particle-wave duality, the same thing as we say when we place a detector at the slits, it's wavefunction collapses before going through the slits and the electrons behaves as waves. **This all shows reality is so subjective, a person seeing those waves afar is as right as a person seeing a particle in close, they both are correct in their own reality.**

What you see isn't what's “out there” rather it's how your viewing apparatus that has warped the path of incoming light.

This Moiré pattern is also pretty similar to space-time deformation due to mass OR how light deforms near a black hole because of gravitational lensing, so different views of black hole will give different lensing patterns. Just like Moiré patterns emerge from two layered grids interacting, gravitational lensing emerges from the curved spacetime geometry interacting with straight-line light (geodesics).

You can find the video of this Moiré patterns demonstration on [YouTube](https://youtube.com/shorts/aO_10Wx3Tak?si=J7Qhyld2rfY8jqQa) - [https://youtube.com/shorts/aO\\_10Wx3Tak?si=J7Qhyld2rfY8jqQa](https://youtube.com/shorts/aO_10Wx3Tak?si=J7Qhyld2rfY8jqQa)