ISSN: 2754-4753

Journal of Physics & Optics Sciences

SCIENTIFIC Research and Community

Editorial

Open Access

Unrolling the M Theory

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Received: June 13, 2025; **Accepted:** June 18, 2025; **Published:** July 01, 2025

One of the biggest problems facing current physics is trying to create a theory that unifies gravity and quantum mechanics and describes all known physical phenomena. Some years ago an alternative solution in the search for this unification was string theory, where one-dimensional objects were said to have modes of vibration, where each mode represented elementary particles, but this theory is still included in the M theory. According to Edward Witten, of the Institute for Advanced Studies at Princeton that M means magic, mystery, membrane [1].

According to the M theory, elementary particles are divided into two classes based on angular momentum or spin. This means that for integer spin particle is 0, 1, 2, there is a particle of the same mass and semi-integer spin 1/2, 3/2, 5/2. Unfortunately, none of these pairs of particles or supercompanions have been found, although theorists continue to speculate that thanks to this supersymmetry weak, electromagnetic and strong interactions with gravity can be unified.

Gravity not set limits to the possible dimensions of space-time, so its equations can be formulated in any dimension. As is well known, the universe that is familiar has three spatial dimensions, height, length and width, which together with temporal form the four dimensions of space-time. But in 1926, Theodor Kaluza and Oskar Klein suggested that space-time might have a hidden fifth dimension [2]. This dimension would be rolled over itself to a tiny size. The size of this dimension explains why people or atoms escape their existence but could give indications of the unification of gravity with electromagnetism [3].

In 1978 Eugene Cremmer, Bernard Julia and Joel Scherk understood that using the concept of supergravity they could include up to seven additional dimensions so an 11-dimensional universe would be a perfectly valid spacetime. The type of real world will depend on how the extra dimensions are rolled.

A particle, which has no dimensions, describes in its movement through space-time a one-dimensional trajectory or world line. A rope, which has of world and a membrane, which has two, length and width, sweeps a volume of world. Then a p-brane sweeps a volume of world of p+1 dimensions and the term p+1 cannot be greater than the dimension of a length, sweeps a sheet number of dimensions of space-time [1].

In 1962, Paul Dirac built a model based on a membrane where he posited that the electron was a closed membrane on itself and that its oscillations could generate other particles like muons. The membrane can then extend in two directions. In 1990, Andrew Strominger found that a string in 10 dimensions can give rise to a pentabrane and that a string with strong interaction is the equivalent of other pentabrans with weak interaction.

Witten and Petr Horava showed the mechanism by which an extra dimension of the M theory contracted into a line segment and concluded that two universes of 10 dimensions are connected by a space-11-dimensional time so particles and strings exist only in the parallel universes of extremes that communicate through gravity. In this space-time the four fundamental forces may converge on a common scale and quantum gravitational phenomena could be more common than is thought, which would have multiple cosmological consequences. When the mathematical problems of this theory have been solved, this theory would make possible the existence of the multiverse, that is to say there could be more universes besides our own.

References

1. The M. Michael Duff Theory. Research and Science, April 1998.
2. Klein O (1926) Quantum theory and five-dimensional relativity. Z Physik 37: 895-906.
3. Superforce. Paul Davies. Salvat Editores 1985, Barcelona, Spain.

Citation: Manuel Malaver (2025) Unrolling the M Theory. Journal of Physics & Optics Sciences. SRC/JPSOS-391. DOI: doi.org/10.47363/JPSOS/2025(7)321