

Some of the most important discoveries in physics, like the theory of gravity and the forces that hold particles together, have come from thinking about the shapes and structures of space and time. Our research builds on this idea by using advanced modern mathematical tools to explore the deep connection between geometry and the fundamental laws of nature.

In earlier work, we showed that certain patterns in particle behavior and restriction on gravity extensions can be explained using a geometric approach. Now, we want to go further and study how the known particles and forces might naturally emerge and how the laws that govern them could be more tightly constrained by geometry.

This research could help reveal a more unified and elegant picture of the universe, by showing how the shapes and symmetries of space itself give rise to the particles and forces we observe.