

East Hills 4-H

May Newsletter 2018



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Could Our World Be Made Up of Strings?

What would a page in a book look like if you were the size of an atom? Would we see lots of dots or all sorts of crazy shapes? Or would we see lots of loops of string? Now I know what you are thinking, loops of string?. Why would it be loops of string? Well, that brings me to one of the things we talked about at the Story of Science project meeting: String Theory.

Now before I go into the String Theory you first need to read a little about the history of particle physics and how our view of the atom has changed. Before the 1930s, physicists believed that everyday matter was made of atoms and the atom was the fundamental particle. In other words, that page in your book was made of atoms of carbon, oxygen (and more) that couldn't be broken down any further. But this idea was wrong, and there were surprises coming in the world of particle physics.

Around 1930 some physicists identified the electron and the proton as well as the neutron. The proton and neutron make up the nucleus of the atom, with electrons circling around the nucleus in orbits. Again, scientist thought they had discovered the fundamental particles of the atom, and again they were wrong, although it took decades to find this out.

Many scientists continued to work on finding "the" fundamental particle, and by the 1970s, they had discovered quarks, leptons, anti-leptons, anti-quarks, bosons and Higgs-bosons. They considered these sub-atomic particles to be fundamental, or elementary particles, meaning they are not made up of any other particles. All of these elementary particles make up the Standard Model of particle physics.

Now that I have said a little bit about the history for the search for fundamental particles, we can move on to String Theory, the main subject of this newsletter article. This theory is that all of the different 'fundamental' particles of the Standard Model are really just different manifestations of one basic object: a string. Before String Theory, it was thought that the fundamental particles were points. The problem with this idea is that a point can only move in a line, meaning it cannot do very much. But a string can oscillate in different ways. If it oscillates a certain way, then from a distance, we see an electron. If it oscillates another way, we call it a photon, or a quark. So String Theory solves a lot of problems physicists have with the Standard Model of particles. And if String Theory is correct, tiny loops of string could make up all of the atoms on that page in your book.

Now I know this idea of strings sounds crazy, but many scientists believe it to be a reasonable theory. They can't prove String Theory yet because we don't have microscopes or instruments to see that far into an atom. So no one knows for sure. But it is still interesting to think about ideas like this. And to imagine the world could be made out of string.

Fiber Arts Project May 2018

At the last Fiber Arts project meeting, we made feathers out of wire and yarn. We started by wrapping the yarn around the cardboard squares to get equal length pieces by cutting them on the side. Then we took the yarn strands and tied them to the wire. Then once the wire was full of yarn we took starch and brushed it onto the yarn to create a stiff feather.

Skit Day 2018

At skit morning, the Fun with Theater project did a skit called "Current Events." It was about a fish who wanted to stay home but then changed her wish! I played a sea turtle with a giant paper mache shell. Sierra, my sister, was a jelly fish made out of an umbrella and ribbons. Clementine was an octopus made out of a red sweater with eight arms. Her sister, Penelope, was a seahorse in a purple dress with pink fins. Kiana was a dolphin. She was wearing a blue dress. Ayla was the little fish who wandered through the ocean current. She wore a yellow and blue striped dress. Sylvia was the mermaid narrator. There were lots of people at skit morning. I was very nervous but I was excited once I got on stage.

Theater Arts

This year we have had two performances for our project. In the first performance, I was Argus, two citizens, and a peacock. In my second performance, during Skit Breakfast, I played a jellyfish. I used a clear umbrella with ribbons hanging from the nubs for my costume. I decorated the ribbons with shiny, glass semi-circles. It had big beautiful felt eyes. Being on stage was really cool. It felt like everything was gone. Like I was a different person, in a different land and time. It was amazing!

Waterfall

We hiked to a waterfall in Berkeley and it was very pretty. We also went down the cement slide at Cordonices park. We went to a rose garden, and there was awesome smelling. We found a rock that is all over the place that had a positive message and you are supposed to hide it somewhere else, so we did. Our rock said "U Rock!"