



# Barbara T. Faires Allegheny Mountain Colloquium



**Speaker:** Dr. Samantha Allen  
(Duquesne University)

**Date:** Tuesday, 31 October 2023, 4:30–5:30PM

**Zoom link:** <https://bit.ly/allemo>



**Abstract:** A mathematical knot is a knotted up loop in 3-dimensional space: think of tying a knot in a piece of rope and then fusing the ends of the rope together. Two knots are called equivalent if one can be deformed to another via an ambient isotopy (put simply, without breaking the loop or passing it through itself). There is a way to add two knots to create another knot (called the connected sum) and a knot which is not a connected sum is called prime.

In this talk, I will explain some basic properties of mathematical knots and the connected sum operation. We will see why this operation is well-defined and, in light of this operation, define the concept of a prime knot in a way analogous to a prime number. The remainder of the talk will be spent discussing how to identify prime knots, the state of the search so far, and some new research that makes identifying a prime knot an algebraic exercise (rather than a geometric one).

This talk will be accessible to students at all levels.

