# The Mysterious Linking of the Borromean Rings Explained: A Geometric Picture of Milnor's Link Invariants

Dr. Anna Cepek

Postdoctoral Scholar, University of Oregon

Everyone knows that sailors work with knots, but less commonly known is that many mathematicians do too. Knot theory is the study of knots and more generally, links, in an abstract sense, namely as injections of disjoint unions of circles into 3-dimensional Euclidean space, roughly speaking. The big goal of knot theory is simple: To distinguish between different knots and links. For nearly 200 years we have recorded efforts of just this, which are generally referred to as knot or link invariants. My talk will begin by discussing the first ever and simplest invariant called the "linking number" which was defined by Carl Friedrich Gauss in 1833. Then we will explore a generalization of the linking number which was defined over 100 years later by John Milnor. Although Milnor's original approach was very algebraic and hard to conceptualize, we will use simple geometric techniques to capture, for example, the subtle linking behavior of the Borromean rings. Along the way, we will also cover the basics of knot theory, namely formally define and give examples of knots and links, identify what it means for two knots or links to be different and discuss what a knot or link invariant is and is not.
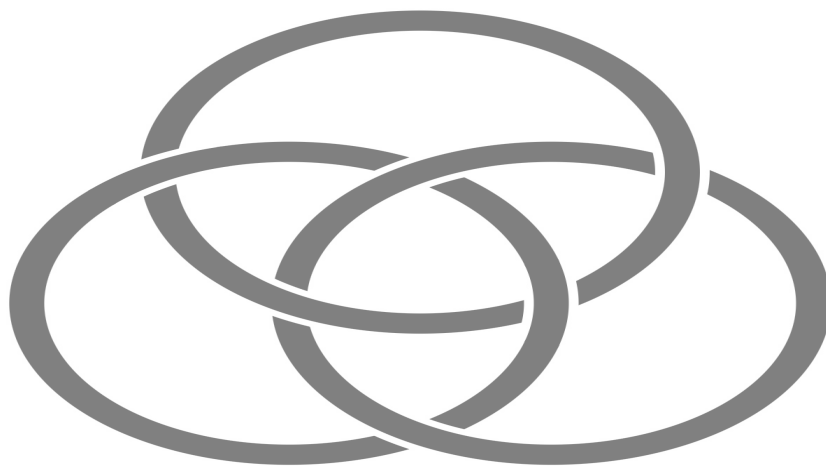
September 7, 2023   4:00 PM
Thursday   BSS 166

FOR MORE INFO GO TO HTTPS://MATH.HUMBOLDT.EDU/GET-INVOLVED/MATHEMATICS-COLLOQUIUM

WE CORDIALLY INVITE YOU TO THE PRE-COLLOQUIUM TEA IN BSS 312
AT 3:30 PM