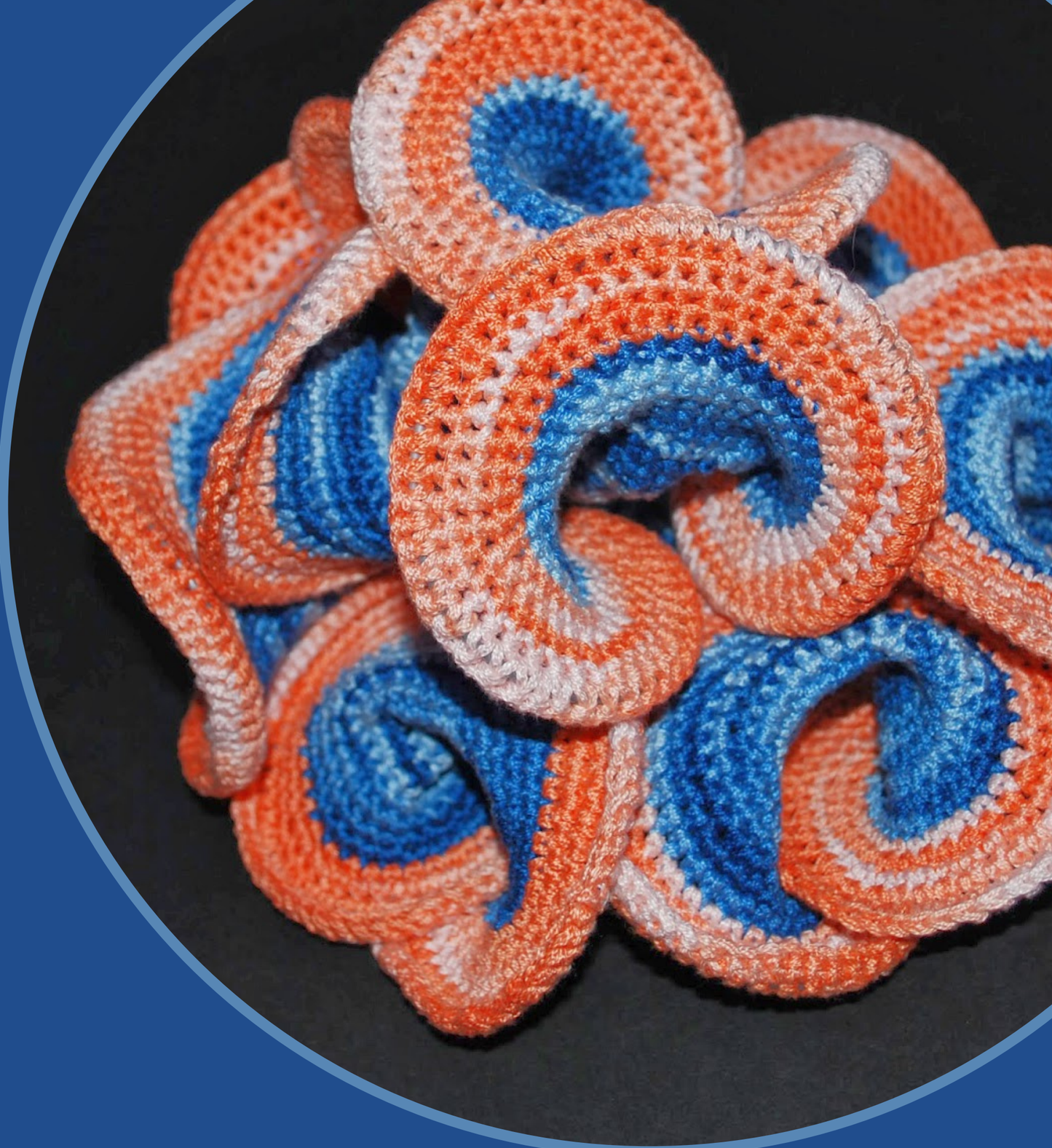
TACTILE HYPERBOLIC GEOMETRY



ABSTRACT

The theoretical discovery of hyperbolic geometry first got its actual tactile example in 1868 when Eugenio Beltrami created a negatively curved surface from paper annuli and named it a pseudosphere. Later the name pseudosphere got attached to a surface created by a tractrix rotating around its axis. However, mathematicians found more useful for theoretical purposes using different, non-tactile models such as Klein or Poincare disc models or half-plane model. Those are traditionally used in college textbooks. However, to experience deeper understanding of hyperbolic geometry, these models were not enough for Bill Thurston when he was a college student. Since in 1901 Hilbert proved that hyperbolic plane cannot be described analytically in 3-space, Thurston together with his peers at informal seminar decided to make a tactile model of hyperbolic plane and created it by gluing together paper annuli without knowing about Beltrami's paper model created hundred years earlier. I learned about Thurston's model in 1997 and decided to make it more durable by crocheting it. Crocheted hyperbolic planes have turned out to be a useful tool in tactile explorations of hyperbolic geometry giving to theoretical knowledge a different perspective.

DAINA TAIMINA
Cornell University

FRIDAY, APRIL 12

US PACIFIC.....9AM
US EASTERN.....12PM
CENTRAL EUROPE.....6PM

Featuring "Show and Ask" Presenters

Sarah Poiani
University of New Mexico

Julius Ross
University of Illinois, Chicago

The talk will be on Zoom. Scan this QR code to join!

https://illustratingmath.org/

Illustrating Math Seminar Online
Second Friday of Every Month