Hyperbolic Crochet: Math as Art

"Hyperbolic Geometry is the Cinderella of Geometry; the most beautiful and the least appreciated!"
-Dr. Sean Lawton

William Thurston had the great idea to create paper models of the hyperbolic plane by exploiting some of its properties. Then Daina Taimina had the great idea to improve on Thurston's idea by creating the **hyperbolic plane with crochet!** Taimina's crocheted models are used to examine the hyperbolic plane, which is, a geometric plane with constant negative curvature.

The shape of the universe is unknown, and so it is possible that parts of its geometry are in fact hyperbolic. Hyperbolic geometry plays an important role in special relativity (in Physics) by unifying both Euclidean geometry of space and a model of hyperbolic space for time.

On the other hand, hyperbolic geometry occurs naturally in biology in coral reefs, sea slugs, and leaves and flowers. In computer science hyperbolic geometry is import as a way to organize and retrieve data. In the arts, it is now in fashion (jewelry and clothing) and in abstract art pieces.

Dr. Sean Lawton

M.C. Escher

Iris van Herpen

Sean Lawton is an assistant professor in the Mathematics Department at The University of Texas at Pan-American. To learn more about the hyperbolic plane and his Experimental Algebra & Geometry Lab (EAGL) please visit: http://eagl.wikidot.com/ or contact Dr. Lawton at lawtonsd@utpa.edu.

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