# Hyperbolic Honeycomb

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Bust: 34", Waist: 27", Hips: 36"

The purpose of this design was to incorporate theory from non-Euclidian geometry and visual inspiration from a honeycomb into a garment for formal wear. Non-Euclidian geometry is a highly-theoretical geometry that works with the hyperbolic plane, which is a plane with constant negative curvature (Taimina, 2009). Non-Euclidian geometry can be modeled by employing simple shapes like pentagons, hexagons, and heptagons, which all have the same distance for each side. When attached around pentagons, hexagons will produce positive curvature, a real-world example is a soccer ball (Taimina, 2009). Conversely, hexagons will create negative curvature (i.e., a hyperbolic plane) when combined with heptagons (Taimina, 2009). Thus, the designer decided to combine these three shapes to create a form-fitting, formal women's garment. The hexagon shape inspired the designer to look at honeycombs and bees for color inspiration.

The design was first modeled in paper on a half-scale dress form. After determining the proper fit, a full-scale pattern was created in paper. Next, the shapes were cut from a caramel-colored cotton plain-weave and sewn together. A hem facing and full lining with black netting were added to create a polished look. Hooks and eyes were used to close the dress.

The decorative pieces sewn on the hem were made from designer cork wall tiles. Cork is highly sustainable and its fluid lines helped to visually represent the honey in the honeycomb. The pattern for the cork was generated using Rhino 3D software and then exported and sent to a computer numerical control (CNC) router, which was used to cut the wall tiles. Each cork piece was then applied by hand to the dress. Small black thread tassels were left at each knot to add texture. The use of black accents in the piece also related back to honeybees.

This piece is significant because it utilizes a novel material, cork, for accenting the design. The design also contributed to the knowledgebase by utilizing the CNC router to cut the material, a process which should be further investigated. Additionally, the use of theory from non-Euclidian geometry is novel and should be explored in future design pieces.

Taimina, D. (2009). *Crocheting adventures with hyperbolic planes*. Natick, MA: AK Peters, Ltd.