1120-13-253   **Elizabeth Gross*** (`elizabeth.gross@sjsu.edu`), San José, CA 95192, and **Nida Obatake** and **Nora Youngs**. *Toric ideals of neural codes.*

A neural code is a collection of codewords (0-1 vectors) of a given length n; it captures the co-firing patterns of a set of neurons. A neural code is convexly realizable if there exist n convex sets in some $\mathbb{R}^d$ so that each codeword in the code corresponds to a unique intersection carved out by the convex sets. There are some methods to determine whether a neural code is convexly realizable, however, these methods do not describe how to draw a realization. In this work, we construct toric ideals from neural codes, and we show how these ideals are related to the theory of piercings in the field of information visualization. (Received February 22, 2016)