1135-92-2750 **Nora Youngs***, nora.youngs@gmail.com, and **Carina Curto**. *Maps between neural codes.*

Understanding how the brain stores and processes information is central to mathematical neuroscience. Neural data is often represented as a neural code: a set of binary firing patterns $\mathcal{C} \subset \{0,1\}^n$. We have previously introduced the neural ring, an algebraic object which encodes combinatorial information, in order to analyze the structure of neural codes. We now relate maps between neural codes to notions of homomorphism between the corresponding neural rings. Using natural operations on neural codes (permutation, inclusion, deletion) as motivation, we search for a restricted class of homomorphisms which correspond to these natural operations. We choose the framework of linear-monomial homomorphisms, and find that the class of associated code maps neatly captures these three operations, and that the class of isomorphisms includes two others - repetition and adding trivial neurons - which are also meaningful in a neural coding context and correspond to codes with no important differences in structure. (Received September 26, 2017)