Activation function as an inspiration for metamaterial design and gyroid as inspiration for activation function design. Part 2: next contexts

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Metamaterials represent a relatively new field of research. Our previous approach to their design was to create a translational surface from some type of mathematical curve. Elliptical curve and sigmoid have dominated. Mostly by linear transformations of the translational surface as such, and also by replicating it or by transformed replication we created different structures of metamaterials. In the current work, we were partly inspired by the work of researchers from MIT and their original approach in creating the so-called procedural metamaterials.

Continuation of our investigation of planar cutting curves on the gyroid showed surprising possible connections of their shape, under specific input conditions, with phonon modes for periodic structures with glide symmetry. Here we finger them out.

Research work with the sigmoid and gyroid bring us several inspirations, for example for the field of applications in biomedicine, in student education and in educational work for lay people. Please, familiarize yourself with them via this output of our research work.