1176-57-109   **William Rushworth*** (`wrushwor@syr.edu`). *Minimal crossing Gauss codes are minimal genus.*
Links in the 3-sphere may be represented by diagrams in the plane, up to the Reidemeister moves. Such a planar diagram naturally defines a certain decorated graph known as a *Gauss code* a.k.a. chord diagram a.k.a. dessin d'enfant. The Reidemeister moves on diagrams define a set of moves on Gauss codes; applying such a move does not change the link encoded by the (equivalence class of the) Gauss code.

However, an arbitrary Gauss code does not necessarily represent a link diagram in the plane. Rather, an arbitrary Gauss code represents a link diagram on closed orientable surface. A natural question is: given an equivalence class of Gauss codes what is the minimal genus of a surface F such that the class represents a link diagram on F? A Gauss code realising this minimum is *minimal genus*.

A related question is: given an equivalence class of Gauss codes what is the minimal number of crossings in a link diagram represented by elements of the class. A Gauss code realising this minimum is *minimal crossing*.

We prove a buy-one-get-one-free-result: a minimal crossing Gauss code is minimal genus. That is, minimising the number of crossings automatically minimises the genus. This is joint work with Hans Boden. (Received January 17, 2022)