1077-05-80   **Arthur T. White*** (`arthur.white@wmich.edu`). *Topological Models of 3-configurations.* Preliminary report.

The iconic model of the Fano plane has several deficiencies, most notably three extraneous intersections of the lines. These are remedied by imbedding K(7), the collinearity (or Menger) graph for the Fano plane, on the torus. This topological approach can be generalized in two directions, as the Fano plane is both PG(2,2) and a 3-configuration. In Proc. London Math. Soc. 3 (70) (1995), 33-55, the author finds topological models for PG(2,n), for all prime powers n. In the present paper we study 3-configurations: finite geometries for which (i) every line has exactly 3 points; (ii) every point is on exactly r lines; (iii) every pair of distinct points belong to at most one line. Topological models are known for the geometries of Pappus and Desargues, and for AG(2,3). If, in (iii) above, "at most" is replaced by "exactly", the collinearity graph is complete and we have a Steiner triple system. Otherwise, if the collinearlity graph is strongly regular, we have a partially balanced incomplete block design. We consider three familiar classes of strongly regular graphs: (a) K(m(n)), where m, n > 1; (b) L(K(n)); (c) L(K(n,n)). We use voltage graphs, medial constructions, and surgery respectively to construct our models. (Received July 19, 2011)