1138-05-188   **Kevin M. Grace*** (`kgrace3@lsu.edu`) and **Stefan H. M. van Zwam**. *Applications of Matroid Templates.*

The classes of even-cycle matroids and even-cut matroids each have hundreds of excluded minors. We show that, subject to announced results of Geelen, Gerards, and Whittle, the number of excluded minors for these classes can be drastically reduced if we consider only the highly connected matroids of sufficient size.

Three closely related classes of GF(4)-representable matroids are the golden-mean matroids, the matroids representable over all fields of size at least 4, and the matroids representable over GF(4) as well as fields of all characteristics. Subject to these same announced results, we have characterized the highly connected matroids in each of these classes. As a direct consequence of this characterization, we give the extremal functions for these classes of matroids, including the golden-mean matroids. The extremal function indicates the maximum number of elements of a simple matroid of rank r. This implies that a conjecture made by Archer in 2005 holds for matroids of sufficiently large rank. (Received February 09, 2018)