

1135-05-1502 **Kevin M. Grace*** (kgrace3@lsu.edu). *All that glitters is not golden-mean: Structure of golden-mean matroids.*

Three closely related classes of $\text{GF}(4)$ -representable matroids are the golden-mean matroids, the matroids representable over all fields of size at least 4, and the matroids representable over $\text{GF}(4)$ as well as fields of all characteristics. Subject to announced results of Geelen, Gerards, and Whittle, 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 high rank. (Received September 22, 2017)