

# Perfect matchings in bipartite graphs, Mersenne primes and 2-rooted primes

Sunil Chebolu\*, Keir Lockridge, Gaywalee Yamskulna

*Department of Mathematics, Illinois State University, Normal, IL 61790*

`schebol@ilstu.edu`

We give graph theoretic characterizations of two important classes of prime numbers: Mersenne primes and primes  $p$  for which 2 generates the multiplicative group of the field of  $p$  elements. Our characterizations of these prime numbers are based on perfect matchings in circulant bipartite graphs on  $2p$  vertices. [arXiv:1404.4096]