An Excluded-Minor Problem in Matroids

S.R. Kingan¹ and Manoel Lemos²

¹Department of Mathematical and Computer Sciences, The Pennsylvania State University
Capital College, Middletown, PA 17057-4898, USA
srkingan@psu.edu

²Departamento de Matematica, Universidade Federal de Pernambuco, Recife, Pernambuco
50740-540, Brazil
manoel@dmf.ufpe.br

Received May 30, 2003

AMS Subject Classification: 05B35, 05C83

Abstract. Consider the class of matroids M with the property that M is not isomorphic to a wheel graph, but has an element e such that both $M \setminus e$ and M/e are isomorphic to a series-parallel extension of a wheel graph. We give a constructive characterization of such matroids by determining explicitly the 3-connected members of the class. We also relate this problem with excluded minor problems.

Keywords: excluded minor, graph, matroid

References

1. S.R. Kingan, Binary matroids without prisms, prism duals, and cubes, *Discrete Math.* **152** (1996) 211–224.
2. J.P.S. Kung, Excluding the cycle geometries of the Kuratowski graphs from binary geometries, *Proc. London Math. Soc.* (3) **55** (1987) 209–242.
3. J.G. Oxley, On nonbinary 3-connected matroids, *Trans. Amer. Math. Soc.* **300** (1987) 663–679.
4. J.G. Oxley, *Matroid Theory*, Oxford University Press, New York, 1992.
5. P.D. Seymour, Decomposition of regular matroids, *J. Combin. Theory Ser. B* **28** (1980) 305–359.