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Kurt W. Luoto* (kwluoto@math.washington.edu), University of Washington, Department of Mathematics, Box 354350, Seattle, WA 98195-4350. *Quasisymmetric functions and decomposability of matroid polytopes.*

In 2006, Billera, Jia, and Reiner invented a new invariant for matroids in the form of a quasisymmetric function. They demonstrated a necessary algebraic condition on the decomposability of matroid base polytopes in general. This suggests the question of whether this condition is sufficient for rank two matroids. We answer this question in the affirmative. Along the way, we discovered a new basis for the quasisymmetric functions which has some interesting properties, and found a simple formula for the quasisymmetric function of a loopless rank two matroid.

We conclude with some unpublished data from investigating which matroids on small ground sets have indecomposable polytopes. (Received February 14, 2009)