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On polars of face lattices of oriented matroids

The positive cocircuits of oriented matroids can be used to define two classes of face lattices of oriented matroids (Edmonds-Mandel and Las Vergnas lattices), each of which is polar to the other. Both lattices generalize polytopal face lattices, but neither class of lattices is contained in the other. This implies that matroid analogs of the results of Weyl and Minkowski do not hold.

In this paper we characterize those oriented matroids having a polar. We also give some results on extensions and adjoints of oriented matroids and discuss results on oriented matroid inner products.

References:

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- 3) B.S. Munson: "Face lattices of oriented matroids", Ph.D.-thesis, Faculty of the Graduate School of Cornell University, Cornell University, Ithaca, 1981