polymatroid

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The *polymatroid* defined by a given matroid (E, r) is the set of all functions $w : E \to \mathbb{R}$ such that

$$w(e) \geq 0 \qquad \text{for all } e \in E$$

$$\sum_{e \in S} w(e) \leq r(S) \qquad \text{for all } S \subset E \ .$$

Polymatroids are related to the convex polytopes seen in linear programming, and have similar uses.