Open problems about infinite matroids - day III

3.1. We say an infinite matroid is *Dowling* if it is tame and all of its finite minors are Dowling matroids. Must every circuit in a 3-connected Dowling matroid be countable? Motivation: this is true for graphic matroids.

3.2. Is every 3-connected graphic matroid a minor of a Ψ-matroid? Motivation: Ψ-matroids are easier to work with than graphic matroids in general.

3.3. We say an infinite matroid M is *planar* if both M and M^* are graphic. Is there a natural way to represent 3-connected planar matroids in terms of some embedding of a graph-like structure in the plane? (this question is deliberately vague). Motivation: Any such matroid must have only countably many edges, so this doesn't run into the cardinality issues we might expect.

3.4 Is every binary thin sums matroid tame? Motivation: no counterexamples known, tame thin sums matroids behave much better than wild ones.

3.5 Let G be a graph-like space inducing a matroid, and let v be a vertex of G. Let $G - v$ be obtained from G by deleting just one vertex and all edges incident with it. Does $G-v$ induce a matroid. Motivation: no counterexamples known, but there are counterexamples where we delete infinitely many vertices at a time.