

# Linear, quadratic and exponential growth in matroid classes

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Given a class  $\mathcal{M}$  of matroids that is closed under taking minors, the *extremal function*,  $h_{\mathcal{M}}(r)$ , measures the growth of  $\mathcal{M}$ . Its value at an integer  $r$  is the maximum number of points of a rank- $r$  matroid in  $\mathcal{M}$ . A seminal 2009 theorem of Geelen, Kabell, Kung and Whittle states that, whenever  $h_{\mathcal{M}}(2) < \infty$ , the function  $h_{\mathcal{M}}$  is either linear, quadratic, or exponential in  $r$ . In more recent years, substantial progress has been made on understanding how this function behaves more precisely in all three regimes, including asymptotics and even exact values. I will discuss some of these results.