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Brill–Noether theory over the Hurwitz space

The Brill–Noether theorem describes the maps of general curves to projective space. In particular, when $g = (r+1)(g-d+r)$, a general genus g curve C admits a finite number of degree d maps $C \rightarrow \mathbb{P}^r$. The number of such maps has a nice combinatorial interpretation. I will discuss an analogue of this result, but for curves C already equipped with a map $C \rightarrow \mathbb{P}^1$ (the presence of such a map might force C to be special and so fail the Brill–Noether theorem). In joint work with E. Larson and I. Vogt, we answer an analogous enumeration problem by relating it to the combinatorics of the affine symmetric group.