Introduction to the weighted projective lines

1. Constructing weighted projective lines from canonical algebras.
   - Rough structure of mod(Λ) (Λ canonical), separating tubular family. ([7])
   - Sketch of tubular shifts [4, (S10)].
   - Construction of $\mathcal{H} = \text{coh}(\mathcal{X})$ in $D^b(\Lambda)$ and its properties ([4, Thm. 6.1]). (Hereditary, noetherian, ... with tilting object $T$ such that $\text{End}(T) = \Lambda$)

2. Axiomatic approach to weighted projective lines.
   - Starting with axioms ($\mathcal{H}$ hereditary, noetherian, ... category with tilting object like in [6, Ch. 10], or [5]) show existence of tilting object $T$ with $\text{End}(T)$ canonical and that $\mathcal{H} = \text{coh}(\mathcal{X})$ as in (1).
   - Review Happel’s theorem classifying hereditary categories with tilting object up to derived equivalence. ([6, Thm 6.3].)

   - The graded algebra $S(p, \lambda)$. ([2, Ch. 1].)
   - Serre’s theorem [2, 1.8]. Avoiding sheaves one can sketch the (much more general) proof in [1, Thm. 4.5] (using [2, (1.5.5)]).
   - Correspondence between torsionfree objects (vector bundles) and CM-modules [2, Thm. 5.1], [3, 7.5+8.3].

4. Representation type and Euler characteristic. Stability (semistability, resp.) of indecomposable bundles in case of positive (zero, resp.) Euler characteristic. ([2, Ch. 5] and [6, Ch. 10].) Shape of the categories in case of positive, zero, negative Euler characteristic, resp.

References