Classical stuff (warning: requires more prerequisites than the class).

Below char $\mathbb{F} = p > 0$, $G = SL_n(\mathbb{F})$

- Kempf vanishing theorem (the higher derived functors $R^i \text{Ind}^G_\mathbb{F}$ vanish on $\mathbb{F}_w \Leftrightarrow$ cohomology vanishing result): [J], Sec 4 in Ch. II.
- Weyl character formula for $\text{ch} M(\lambda)$: [J], Sec 5 in Ch. II.
- Steinberg tensor product theorem: [J], Sec 3 in Ch. II.

Character formulas for simples: since we know $\text{ch} M(\lambda)$, we reduce the computation to expressing $\text{ch} L(\mu)$ via $\text{ch} M(\lambda)$'s as in Section 2 of Lec 16.

Guess: for $\mu \in \Lambda^+$ these coefficients are values at $-1$ of “parabolic affine KL polynomials” as long as $p$ is “sufficiently large.”

Results: True for $p > n$ w/o explicit bound


...relating representations of affine Lie algebras to those of quantum groups

In 2000's more direct approaches were found (e.g. Betrukamirov & collaborators). They will be mentioned later.

Absolutely enormous explicit bound on $p$ for the conjectured character formula to hold ($p$ should be of order $n^n$)
