RCA, PROBLEM SET 4

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0.1. Show that the indecomposable summands of P_{KZ} are precisely the indecomposable projective objects that are also injective.

The next two problems are relatively hard...

0.2. Suppose that $c(s) \not\in \frac{1}{2}+\mathbb{Z}$ for all c. Show that the KZ functor $\mathcal{O}_c(W)$ is fully faithful on the standardly filtered objects.

0.3. We assume that the tensor product functor $\operatorname{Pon}_{n_1}(\dot{U}_\epsilon) \boxtimes \operatorname{Pol}_{n_2}(\dot{U}_\epsilon) \to \operatorname{Pol}_{n_1+n_2}(\dot{U}_\epsilon)$ maps the projective objects to projective objects. Show the following

1. Every projective object in $\operatorname{Pol}_n(\dot{U}_\epsilon)$ is included into $(\mathbb{C}^m)^{\otimes n}$ with standardly filtered cokernel.
2. Every standard object in $\operatorname{Pol}_n(\dot{U}_\epsilon)$ is included into $(\mathbb{C}^m)^{\otimes n}$.
3. $(\mathbb{C}^m)^{\otimes n}$ is injective.
4. Deduce that the Schur functor is fully faithful on the projective objects.