Eine Woche, ein Beispiel
11.26 calculation of $\text{Perv}_\Delta(\mathbb{C}\mathbb{P}')$

Final goal: Fill in the tables in the next page.
(for first time, remove the $i'$ column)
We won't show the following fact in this document:
<u>Fact</u> There are exactly 5 indec reps in $\text{Perv}_\Delta(\mathbb{C}\mathbb{P}')$.

Ref:

[Willians]: Langlands correspondence and Bezrukavnikov's equivalence

calculations from Lukas Bonfert's note (don't forward this to anyone else).

$$\psi \underset{var}{\overset{can}{\rightleftarrows}} \phi \qquad\qquad \text{alias}$$

$$var \circ can + 1 = 1$$

$i_* \underline{Q}_{\{\infty\}}$
(0,1,1,1)

| | n | -2 | -1 | 0 | 1 |
|---|---|---|---|---|---|
| $\mathbb{C}$ | $j^*$ | 0 | 0 | 0 | 0 |
| $\{\infty\}$ | $i^*$ | 0 | 0 | $Q$ | 0 |
| | $i^!$ | 0 | 0 | $Q$ | 0 |
| | $R^n\Gamma$ | 0 | 0 | $Q$ | 0 |

$$0 \underset{0}{\overset{0}{\rightleftarrows}} Q \qquad IC_0$$

In [Williams], {0} is digged out

$\underline{Q}_{\mathbb{CP}'}[1]$
(-1,-1,-1,-2)

| | n | -2 | -1 | 0 | 1 |
|---|---|---|---|---|---|
| $\mathbb{C}$ | $j^*$ | 0 | $Q$ | 0 | 0 |
| $\{\infty\}$ | $i^*$ | 0 | $Q$ | 0 | 0 |
| | $i^!$ | 0 | 0 | 0 | $Q$ |
| | $R^n\Gamma$ | 0 | $Q$ | 0 | $Q$ |

$$Q \underset{0}{\overset{0}{\rightleftarrows}} 0 \qquad IC_\infty$$
$$IC(\mathbb{CP}', \underline{\mathbb{C}}_{\mathbb{C}})$$

$Rj_* \underline{Q}_{\mathbb{C}}[1]$
(-1,0,0,-1)

| | n | -2 | -1 | 0 | 1 |
|---|---|---|---|---|---|
| $\mathbb{C}$ | $j^*$ | 0 | $Q$ | 0 | 0 |
| $\{\infty\}$ | $i^*$ | 0 | $Q$ | $Q$ | 0 |
| | $i^!$ | 0 | 0 | 0 | 0 |
| | $R^n\Gamma$ | 0 | $Q$ | 0 | 0 |
| | $\Gamma$ | 0 | $Q$ | $Q$ | 0 |

$$Q \underset{1}{\overset{0}{\rightleftarrows}} Q \qquad I(\psi)$$

$j_! \underline{Q}_{\mathbb{C}}[1]$
(-1,0,0,-1)

| | n | -2 | -1 | 0 | 1 |
|---|---|---|---|---|---|
| $\mathbb{C}$ | $j^*$ | 0 | $Q$ | 0 | 0 |
| $\{\infty\}$ | $i^*$ | 0 | 0 | 0 | 0 |
| | $i^!$ | 0 | 0 | $Q$ | $Q$ |
| | $R^n\Gamma$ | 0 | 0 | 0 | $Q$ |

$$Q \underset{0}{\overset{1}{\rightleftarrows}} Q \qquad P(\psi)$$

???
(-1,1,1,0)

| | n | -2 | -1 | 0 | 1 |
|---|---|---|---|---|---|
| $\mathbb{C}$ | $j^*$ | 0 | $Q$ | 0 | 0 |
| $\{\infty\}$ | $i^*$ | 0 | 0 | $Q$ | 0 |
| | $i^!$ | 0 | 0 | $Q$ | 0 |
| | $R^n\Gamma$ | 0 | 0 | 0 | 0 |

$$Q \underset{(1\,0)}{\overset{\binom{0}{1}}{\rightleftarrows}} Q^2 \qquad \text{big tilting sheaf}$$
$$P(\phi) = I(\phi)$$