Eine Woche, ein Beispiel

11.26 calculation of $\mathrm{Perv}_\Lambda(\mathbb{CP}^1)$

Final goal: Fill in the tables in the next page.

(for presentation, remove the $i^!$ column)

We won't show the following fact in this document:

<u>Fact</u> There are exactly 5 indec reps in $\mathrm{Perv}_\Lambda(\mathbb{CP}^1)$.

Ref:

[Willians]: Langlands correspondence and Bezrukavnikov's equivalence

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

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

$\mathrm{var} \circ \mathrm{can} + 1 = 1$

$i_* \mathbb{Q}_{\{\infty\}}$

$(0,1,1,1)$

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

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

In [Willians], $\{0\}$ is digged out

$\mathbb{Q}_{\mathbb{CP}^1}[1]$

$(-1,-1,-1,-2)$

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

$\mathbb{Q} \underset{0}{\overset{0}{\rightleftarrows}} 0$ IC_∞

$IC(\mathbb{CP}^1, \mathbb{Q}_{\mathbb{C}})$

$Rj_* \mathbb{Q}_{\mathbb{C}}[1]$

$(-1,0,0,-1)$

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

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

$j_! \mathbb{Q}_{\mathbb{C}}[1]$

$(-1,0,0,-1)$

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

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

???

$(-1,1,1,0)$

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

$\mathbb{Q} \underset{(1\ 0)}{\overset{\binom{0}{1}}{\rightleftarrows}} \mathbb{Q}^2$

big tilting sheaf

$P(\phi) = I(\phi)$