Definition 1. $\mathrm{K}^{\leqslant n}(\mathcal{A}), \mathrm{D}^{\leqslant n}(\mathcal{A})$ – *full subcategories of objects* X *for which* $H^i(X) = 0$ *for* $i > n$.

Analogously one defines $\mathrm{K}^{\geqslant n}(\mathcal{A}), \mathrm{D}^{\geqslant n}(\mathcal{A})$.

We know $\mathcal{A} = \mathrm{D}^{\leqslant 0}(\mathcal{A}) \cap \mathrm{D}^{\geqslant 0}(\mathcal{A})$.

Definition 2. *Let* $\mathcal{C}$ *be a triangulated category. Assume that* D *is a subcategory of* $\mathcal{C}$. *Then we write* $D^{\leqslant n} = D^{\leqslant 0}[-n]$, $D^{\geqslant n} = D^{\geqslant 0}[-n]$.

Definition 3 (t-structure)**.** *A t-structure on* $\mathcal{C}$ *consists of a pari of full subcategories* $(\mathcal{C}^{\leqslant 0}, \mathcal{C}^{\geqslant 0})$ *in* $\mathcal{C}$ *which satisfy the following properties:*

- $\mathcal{C}^{\leqslant 0} \subset \mathcal{C}^{\leqslant 1}$, $\mathcal{C}^{\geqslant 0} \supset \mathcal{C}^{\geqslant 1}$,
- $X \in \mathcal{C}^{\leqslant 0} \wedge Y \in \mathcal{C}^{\geqslant 1} \implies \mathrm{Hom}(X, Y) = 0$,
- *for all* $X \in \mathcal{C}$ *there is a distinguished triangle* $A \to X \to B \to A[1]$ *such that* $A \in \mathcal{C}^{\leqslant 0}, B \in \mathcal{C}^{\geqslant 1}$.

Definition 4 (core)**.** $\mathcal{A} = \mathcal{C}^{\leqslant 0} \cap \mathcal{C}^{\geqslant 0}$ *is called the* core *of the t-structure on* $\mathcal{C}$.

Proposition 5. *In* $\mathrm{D}(\mathcal{A})$, *the subcategories* $\mathrm{D}^{\leqslant 0}(\mathcal{A})$ *and* $\mathrm{D}^{\geqslant 0}(\mathcal{A})$ *define a t-structure on* $\mathrm{D}(\mathcal{A})$.

Theorem 6. *The core of any t-structure on triangulated* $\mathcal{C}$ *is an additive category.*

Lemma 7. *There exist functors* $\tau_{\leqslant n} : \mathcal{C} \to \mathcal{C}^{\leqslant n}$ $(\tau_{\geqslant n} : \mathcal{C} \to \mathcal{C}^{\geqslant n})$ *which are right (left) adjoint to the inclusion functors.*

Moreover, for any $X \in \mathrm{Ob}(\mathcal{C})$ *there exists a distinguished triangle*

$$\tau_{\leqslant 0} X \to X \to \tau_{\geqslant 1} X \to (\tau_{\leqslant 0} X)[1].$$

Moreover, any distinguished triangle $A \to X \to B \to A[1]$ *such that* $A \in \mathcal{C}^{\leqslant 0}, B \in \mathcal{C}^{\geqslant 1}$ *is isomorphic to the one above.*

Lemma 8.

- $\tau_{\leqslant n} X = 0 \iff X \to \tau_{\geqslant n+1} X$ *is an isomorphism,*
- *if* $m \leqslant n$, *then there are maps*

$$\tau_{\leqslant m} X \to \tau_{\leqslant m} \tau_{\leqslant n} X,$$

$$\tau_{\geqslant n} X \to \tau_{\geqslant n} \tau_{\geqslant m} X,$$

which are isomorphisms, if $m \leqslant n$, *then there is a unique isomorphism*

$$\tau_{\geqslant m} \tau_{\leqslant n} X \to \tau_{\leqslant n} \tau_{\geqslant m} X (= \tau_{[m,n]} X).$$