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 pair 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

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