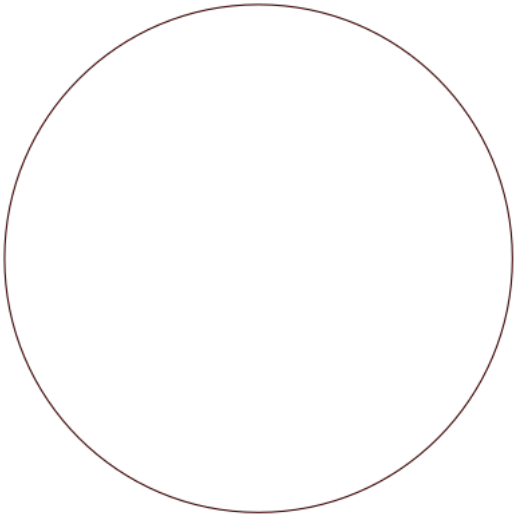
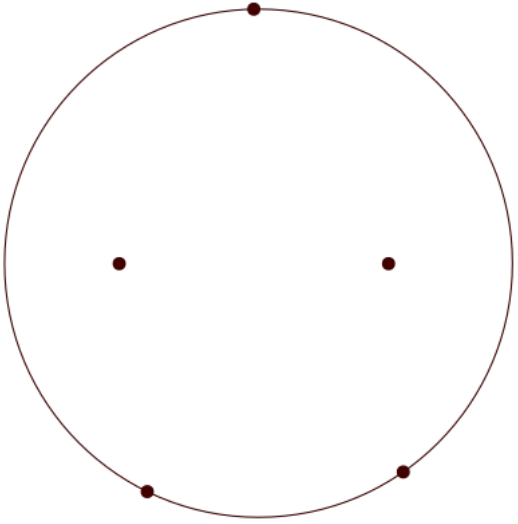
A geometric model for the non-homogeneous tubes of the cluster category of affine type D

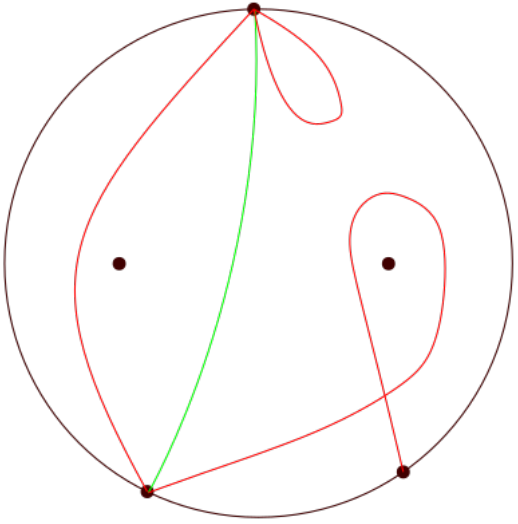
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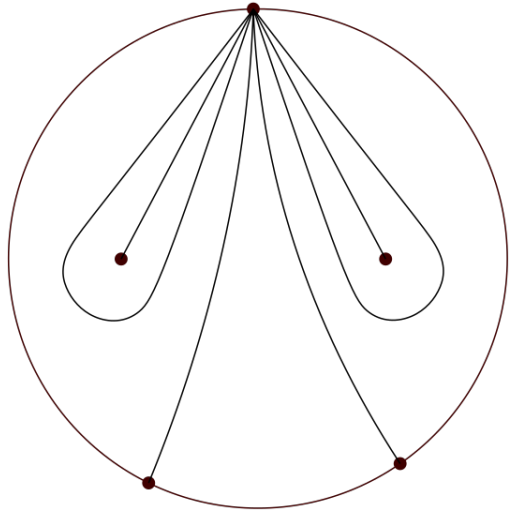
Ruhr-Universität Bochum

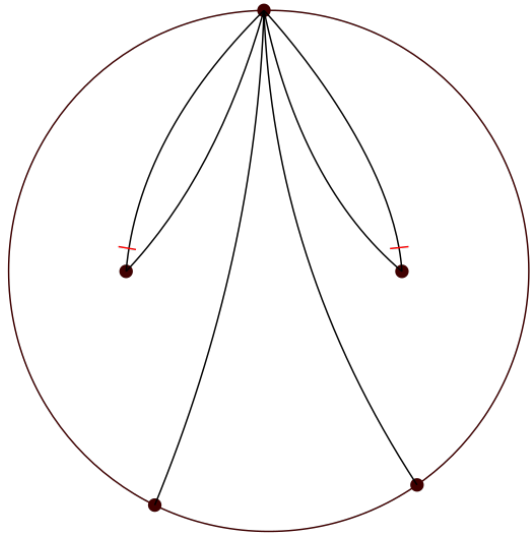
CARE, September 2026



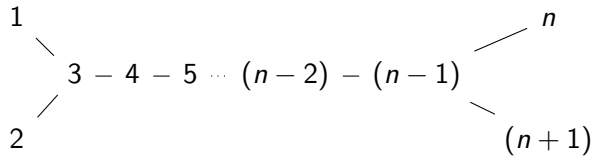




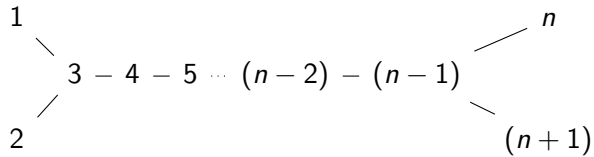


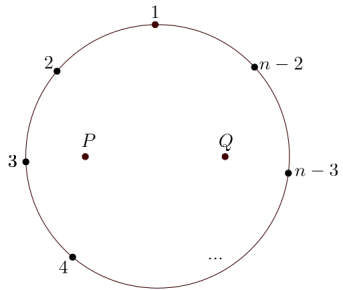


Structure of the cluster category of affine type D_n

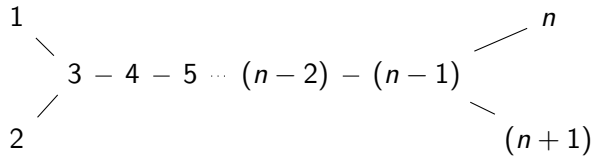


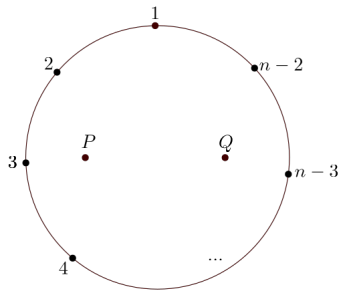
Structure of the cluster category of affine type D_n

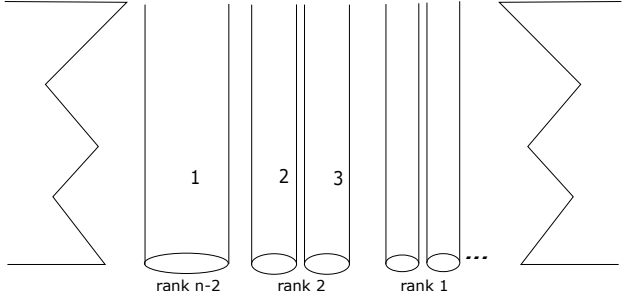




Structure of the cluster category of affine type D_n

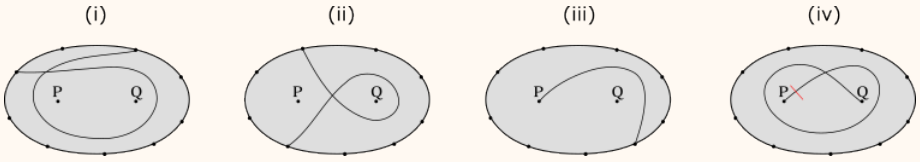




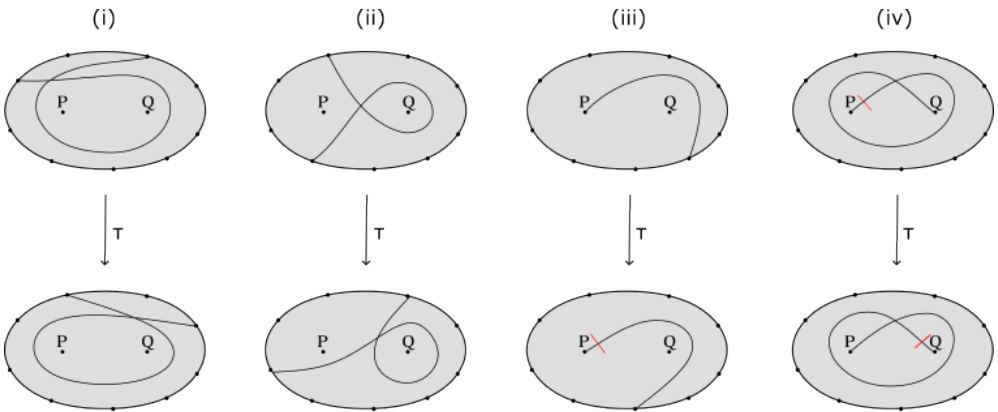


A **generalized arc** is an arc which is allowed to cross itself.

Generalized arcs in the twice-punctured disk



Effect of τ on the generalized arcs



Tube of rank $n-2$: $\mathcal{T}_1$

Proposition [Baur-Bittmann-Gunawan-Todorov-Yıldırım '24]

$$\mathrm{Ind}(\mathcal{T}_1) \overset{\text{bij.}}{\longleftrightarrow} \{\text{generalized arcs of type (i)}\}$$

Tubes of rank 2: $\mathcal{T}_2$ and $\mathcal{T}_3$

In these tubes [Qiu-Zhou '17]:

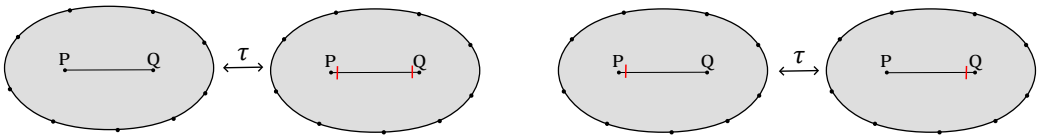
$$\begin{array}{ccccc} \text{objects at the} \\ \text{mouth of the tubes} & \leftrightarrow & \begin{array}{c}\text{rigid} \\ \text{objects}\end{array} & \leftrightarrow & \begin{array}{c}\text{arcs without} \\ \text{self-crossing}\end{array} \end{array}$$

Tubes of rank 2: $\mathcal{T}_2$ and $\mathcal{T}_3$

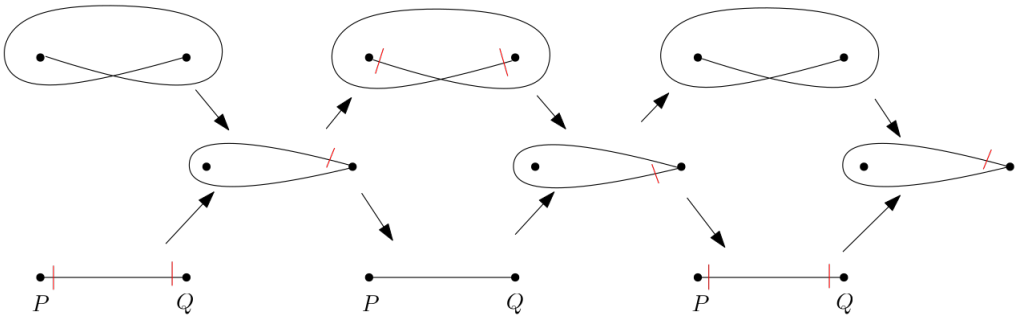
In these tubes [Qiu-Zhou '17]:

objects at the mouth of the tubes $\leftrightarrow$ rigid objects $\leftrightarrow$ arcs without self-crossing

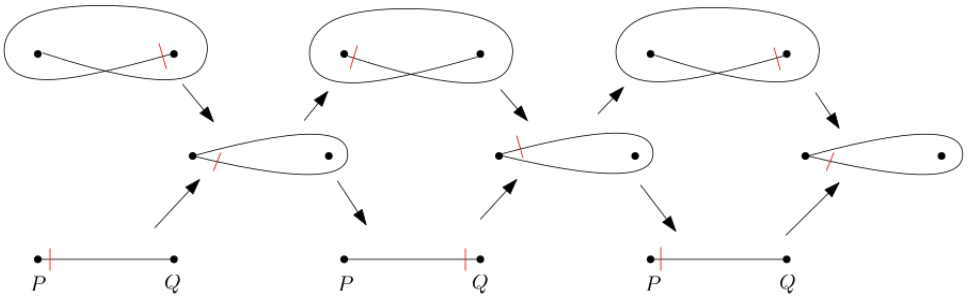
Arcs:



Quiver of generalized arcs: Γ_0



Quiver of generalized arcs: Γ_1



Theorem [F.'25]: $Q = \Gamma_0 \sqcup \Gamma_1$ is a stable translation quiver with two connected components.
Q is isomorphic to $\mathcal{T}_2 \sqcup \mathcal{T}_3$.

Thank you !