A Combinatorial Model for Algebras of Type $\mathbb{A}_n$.

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In [2] Caldero, Chapoton and Schiffler introduced the category of diagonals $\mathcal{D}_n$ of the $(n+3)$ polygon for which indecomposable objects are the diagonals of the polygon and the irreducible morphisms are direct sums of elementary movements between diagonals. They proved that this category is equivalent to the cluster category in the case $\mathbb{A}_n$. In this talk, we describe a categorical equivalence between category $\mathcal{D}_n$ and a new combinatorial category with indecomposable objects defined by Dyck paths. For this category, we also describe the irreducible morphisms and the corresponding Auslander-Reiten quiver.

References

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