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Generalized Catalan Numbers and Their Properties

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Poster Presentation P39

GENERALIZED CATALAN NUMBERS AND THEIR PROPERTIES

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Considering the recurrence relations and generating functions of Catalan numbers and Schröder numbers, we define a class of generalized Catalan numbers and its generating function with the above two number sequences and many others as its special cases. The combinatorial properties of generalized Catalan numbers, including the continued fraction of the generating function, the Hankel decomposition, the Hankel transform and the total positivity of the Hankel matrix, are presented.