Products of Catalan numbers which are squares and related problems

Lajos Hajdu

University of Debrecen, Hungary

Let C_n be the n-th Catalan number. In the talk we show that the product of two different Catalan numbers cannot be a square of an integer. On the other hand, for each $k \geq 3$, there are infinitely many k-tuples of pairwise different Catalan numbers with product being squares. We also present the characterization of $m \in \mathbb{N}_+$ such that $C_m C_{m+1}$ is a powerful number and show that there are infinitely many such m. We discuss various related problems, as well.

The new results presented are joint with F. Luca, Sz. Tengely and M. Ulas.